UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

WI-LAN INC.	§	
	§	
v.	§	CIVIL ACTION NO. 2:07-CV-473[TJW]
	§	
ACER, INC., *et al.*	§	
	§	**CONSOLIDATED WITH:**
	§	
WI-LAN INC.	§	
	§	CIVIL ACTION NO. 2:07-CV-474[TJW]
v.	§	
	§	
WESTELL TECHNOLOGIES, INC., *et al.*	§	JURY TRIAL REQUESTED

	§	
WI-LAN INC.	§	
	§	
v.	§	CIVIL ACTION NO. 2:08-CV-247[[TJW]
	§	
RESEARCH IN MOTION	§	
CORPORATION, *et al.*	§	JURY TRIAL REQUESTED

Wi-LAN INC.'S OPENING CLAIM CONSTRUCTION BRIEF

TABLE OF CONTENTS

Page

TABLE OF AUTHORITIES

Page(s)

CASES

STATUTES

<u>Index of Exhibits</u>

Ex. A	United States Patent Number 5,282,222
Ex. B	File History excerpts for United States Patent Number 5,282,222
Ex. C	*The New IEEE Standard Dictionary of Electrical and Electronics Terms*, Fifth Edition (1993)
Ex. D	*Synchronization in Digital Communication Volume 1, Phase-, Frequency- Locked Loops, and Amplitude Control (Wiley Series in Telecommunications and Signal Processing)*, Heinrich Meyr, Gerd Ascheid, Vol. 1 (1990).
Ex. E	*Electronic Communications Systems: Fundamentals Through Advanced*, Wayne Tomasi, 1988
Ex. F	*Digital Communications*, John G. Proakis, Second Edition (1989)
Ex. G	*Data Communications Principles*, Richard D. Gitlin, Jeremiah F. Hayes, Stephen B. Weinstein
Ex. H	*Performance of an RCPC-Coded OFDM-based Digital Audio Broadcasting (DAB) System*, Hoeher, Hagenaner, Offer, Rapp
Ex. I	*OFDM for Data Communications Over Mobile Radio FM Channels - Part 1: Analysis and Experimental Results*, Casa, Leung
Ex. J	*Data Transmission by Frequency-Division Multiplexing Using the Discrete Fourier Transform*, Weinstein, Ebert
Ex. K	*Advanced Groupband Data Modem Using Orthogonally Multiplexed QAM Technique*, Hirosaki, Hasegawa, Sabato
Ex. L	*Analysis and Simulation of a Digital Mobile Channel Using Orthogonal Frequency Division Multiplexing*, Cimini, Jr.
Ex. M	United States Reissued Patent RE37,802
Ex. N	File History excerpts for United States Reissued Patent RE37,802
Ex. O	File History excerpts for United States Patent Number 2,555,268
Ex. P	*Newton's Telecom Dictionary*, Ninth Edition 1995
Ex. Q	*Merriam-Webster's Collegiate Dictionary*, Tenth Edition (1994)
Ex. R	*The IEEE Standard Dictionary of Electrical and Electronics Terms*, Sixth Edition (1996)

Ex. S	*IBM, Vocabulary for Data Processing, Telecommunications, and Office Systems*, Seventh Edition (1981)
Ex. T	*Prentice Hall's Illustrated Dictionary of Computing*, Nader (1992)
Ex. U	*Declaration of Alexander Haimovich, Ph.D., in Support of Wi-LAN's Opening Claim Construction Brief (Haimovich Decl.)*
Ex. V	*Declaration of Dr. Richard D. Gitlin in Support of Plaintiff's Claim Construction Brief (Gitlin Decl.)*

I. INTRODUCTION

Pursuant to P.R. 4-5(a), Wi-LAN Inc. ("Wi-LAN") respectfully submits this Opening Brief on the proper construction of disputed claim terms of United States Patent Nos. 5,282,222 ("the '222 patent") and RE37,802 ("the '802 patent").

II. PRINCIPLES OF CLAIM CONSTRUCTION

Wi-LAN proposes constructions of the '222 patent and the '802 patent in accordance with long-established principles of claim construction—giving a claim term the full breadth of its ordinary meaning that one of skill in the art, at the time of the invention and in light of the patent's specification and prosecution history, would have given it, except in the unusual circumstances where the intrinsic record provides a special definition for the term. *See*, *e.g.*, *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316–17 (Fed. Cir. 2005). Because the Court is familiar with the law of claim construction, Wi-LAN will discuss specific claim construction principles only where applicable to the facts of this case.

III. LEVEL OF ORDINARY SKILL IN THE ART

Claims are to be construed from the viewpoint of a person of ordinary skill in the art.[1] The level of ordinary skill in the art is a function of many factors, including "'(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.'"[2]

Considering all of those factors in the context of the technology of the '222 patent and the '802 patent, one of ordinary skill in the art of spread spectrum wireless communications would have a Bachelor of Science degree, or its equivalent, in electrical engineering with approximately five years of design engineering experience in the field of wireless technology, or a Master of Science degree, or its equivalent, with approximately two years of design engineering experience in the field of wireless technology.

---

[1] *Phillips*, 415 F.3d at 1313 ("The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim construction.").

[2] *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007) (quoting *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983)).

IV. OVERVIEW OF THE TECHNOLOGY RELATING TO THE '222 PATENT

The inventors filed the application for the 222 patent, entitled "Method and Apparatus for Multiple Access Between Transceivers in Wireless Communications using OFDM Spread Spectrum," on March 31, 1992 and the PTO issued the patent on January 25, 1994. Today, wideband OFDM communication systems are ubiquitous. We find them in our homes, offices, restaurants, libraries, parks, airports, and even airplanes. But in 1992, when Michel Fattouche and Hatim Zaghloul filed the application that led to the '222 patent, their idea that wideband OFDM technology could be used for efficient, effective, high-speed wireless networks was a radical departure from the conventional wisdom in the field. But history has shown that Fattouche and Zaghloul were correct, and their ideas have paved the way for an entire generation of wireless technology.

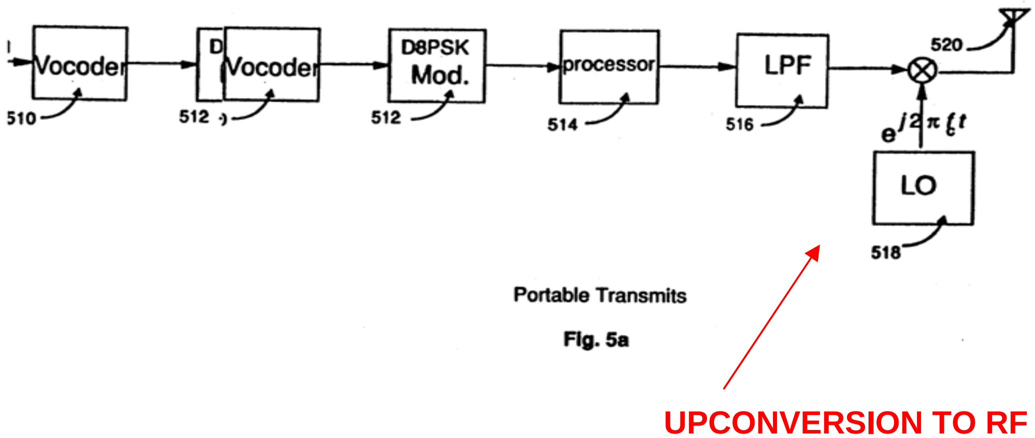
The OFDM system taught and claimed in the '222 patent places information on multiple, orthogonal subcarriers, which is akin to placing multiple streams of cars in separate lanes on a superhighway. Just as the separate streams of cars are able to travel the highway without colliding, an OFDM system creates multiple streams of data that travel through the air, carried by orthogonal subcarriers, without colliding. This general OFDM technology existed in 1992, but it had not been adapted to widespread use as it has today. The inventors recognized that the key to using OFDM in practical, real-world wireless networks was to build those networks around wideband OFDM systems. They saw that if one chooses the number of subcarriers (*i.e.*, the number of highway lanes) and the frequency spacing between those subcarriers (*i.e.*, and width of the highway lanes) appropriately, one can build inexpensive, efficient, high-speed wireless networks using wideband OFDM technology. This new type of OFDM — wideband OFDM — is what the inventors disclosed and claimed in their '222 patent.

V. PROPOSED CONSTRUCTIONS FOR THE ’222 PATENT

A. Transceiver

Claim Term	Wi-LAN’s Construction	Defendants’ Proposal
transceiver [claims 1-3]	A two-way radio unit	transceiver that omits clock recovery, carrier recovery, automatic gain control, passband limiter, power amplifier, an equalizer, and an interleaver-deinterleaver

Wi-LAN’s construction of “a two-way radio unit” is consistent with the intrinsic and extrinsic evidence. Indeed, all aspects of the invention described and claimed in the ’222 patent are directed at wireless communications (*i.e.*, “radio frequency communication,” Ex. A, 1:51), which means the transceiver must necessarily be a radio unit. The title of the ’222 patent refers to the claimed invention as a “Method and Apparatus for Multiple Access Between Transceivers in Wireless Communications using OFDM Spread Spectrum.” (Ex. A, 1:2-5.) Similarly, the Field of the Invention states: “This invention relates to voice and data transmission in wireless communications, and particularly between fixed and portable transmitters and receivers.” (*Id.*, 1:8-10.) The Background and Summary of the Invention also states that “to allow use of the radio frequency spectrum without obtaining a license in North America, the system must use a spread spectrum.…” (*Id.*, 1:50-52, emphasis added.) FIG. 5b of the specification (which illustrates the transmitter portion of one embodiment of an W-OFDM system) further shows that a W-OFDM signal is modulated with information or data symbols to be transmitted and “upconverted to RF [radio frequency] frequencies using local oscillator 518 and transmitted by antenna 520.” (*Id.*, FIG. 5, 9:30-32; annotations and emphasis added.)



Portable Transmits

Fig. 5a

The specification of the '222 patent expressly defines the term transceiver as a "radio unit" (*Id.*, 1:43-44 ("One of the constraints of the system is that a transceiver, or portable radio unit must be small in size. The smaller the unit the better for portability…." (emphasis added). The specification further defines the transceiver as capable of two-way communication: "transceivers, each capable of transmitting and receiving information (voice, data, or video, in the form of electromagnetic signals." (*Id.*, 1:33-35.) The claims themselves also require this two-way capability for a transceiver. (*See, e.g.*, *id.*, claim 1 ("transceiver including a transmitter for transmitting … and a receiver for receiving"), claim 7 ("receiving … at the second transceiver"), claim 8 ("transmitting from the second transceiver").) Wi-LAN's construction is also consistent with the extrinsic evidence, including THE NEW IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONIC TERMS (5th ed. 1993) which defines "transceiver" as "[t]he combination of radio transmitting and receiving equipment in a common housing, usually for portable or mobile use, and employing common circuit components for transmitting and receiving." (Ex. C, pg. 1392, emphasis added.) Wi-LAN's construction is also consistent with the understanding of a person of ordinary skill in the art. (*Haimovich Decl.*, ¶45.)

What defendants propose, on the other hand, is not helpful or proper. Defendants do not offer a construction for "transceiver," but instead seek to read a number of limitations into the asserted claims of the '222 patent by attempting to define the claimed transceiver as a "transceiver that omits clock recovery, carrier recovery, automatic gain control, passband

limiter, power amplifier, an equalizer, and an interleaver-deinterleaver." Defendants rely on language from column 2 of the '222 patent that states the "system omits …" the referenced elements. Such reliance is misplaced because it ignores the specific context in which this particular statement was made (the omissions are stated as "advantages of the present invention," *see* Ex. A, 2:13, for "Reducing Analog Complexity," *see id.*, 12:44, not omissions required to practice W-OFDM). Such reliance is also misplaced because it ignores the entirety of the specification, including the claims themselves, which also make clear that these elements are optional ("not required") not that they must be omitted to practice the patented W-OFDM invention. (*See, generally, id.*, 12:51-13:64.) In other words, omission of each of these elements is taught as an advantage of W-OFDM, *i.e.*, an option for reducing analog complexity that is made possible by W-OFDM. Absent an express declaration by the patentee, it is improper to limit scope of the '222 patent claims to only W-OFDM systems that omit these elements. *Playtex Prods., Inc. v. Procter & Gamble Co.*, 400 F.3d 901, 908 (Fed. Cir. 2005). The inventors of the '222 patent make no such declaration and, in fact, teach away from any such limitation.

Not a single claim in the '222 patent includes the requirement that these elements must be omitted from an W-OFDM system (*see, e.g.*, independent claims 1 and 7)— indeed when these elements are mentioned in the claims they are either stated as "not required" (optional advantages for reducing analog complexity in a W-OFDM system) or are expressly included as structural elements (*see* claim 3). (*Haimovich Decl.*, ¶¶49-52) What defendants propose is improper, as it seeks to require that the claimed W-OFDM transceiver must omit these elements to fall within the scope of the '222 patent claims, even where the transceiver includes all limitations set forth in the claim (*i.e.*, those elements required to enable the W-OFDM spread spectrum technology of the '222 patent). (*Idl.*, ¶¶49-52.) For example, independent claims 1 and 7 include a limitation that carrier recovery and clock recovery are "not required" but not that they must be omitted. Claim 1 also states that carrier recovery and clock recovery are "not required" through the definition of "wideband frequency division multiplexer" (*See* Section V.C, *infra* which defines "wideband" by parameters that enable a W-OFDM system

"to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER"). As another example, claim 7 also contains an express recitation that these same elements are optional ("not required") (Ex. A, 20:30-31 ("whereby the width of the frequency band is chosen so that neither carrier nor clock recovery is required at the second transceiver").)

As mentioned above, other claims in fact include the "omitted" elements. In claim 3, which depends from claim 1, the recited "power controller" functions as an automatic gain control and is expressly included as a structural element of the claim. The "power controller" performs the function of "monitoring the power of the received signal and … controlling the power of the signal." (*Id.*, 19:44-48.) The same "power controller" (again, which defendants' construction states should be omitted for a system that otherwise uses W-OFDM to fall within the scope of the patent) is in fact included (not omitted) in one of the described embodiments of a W-OFDM system. (*See id.*, FIG. 5b, 9:36-39 ("The average power of the downconverted signal is monitored by a power controller 525 that adjusts the average power to the specifications required by the sampler 526.").) One of ordinary skill in the art would recognize this aspect of the "power controller" to be "automatic gain control." (*Haimovich Decl.*, ¶51.)

The specification also includes additional examples of W-OFDM embodiments with the "omitted" elements included. These examples (in addition to the "power controller") include the following:

- With respect to the proposed omission of a "power amplifier," the '222 patent states that while the "power amplifier" is not necessary (Ex. A, 12:63-67), it also describes how a "power amplifier" may be used (*id.*, 13:3-4 ("A class A PA can be used at the expense of power efficiency.")). (*Haimovich Decl.*, ¶¶50-51.)

- With respect to the proposed omission of an "interleaver-deinterleaver," the '222 specification states that the function is not necessary when "predistortion" is used (Ex. A, 12:51-54) and that, otherwise, the "vocoder" implicitly applies "interleaving/deinterleaving" (*id.*). (*Haimovich Decl.*, ¶¶50-51.)

The defendants' proposed construction of the term transceiver thus improperly seeks to read structural omissions as limitations in the asserted claims that directly contradict the written

description and claims of the patent. Wi-LAN's proposed construction is consistent with the patent's teachings and should be adopted.

B. Amplitude and Phase Differential Characteristics

Claim Term	Wi-LAN's Construction	Defendants' Proposal
amplitude and phase differential characteristics	amplitude and phase distortions	amplitude and phase characteristics resulting from differential modulation

The terms "amplitude and phase differential characteristics" "amplitude and phase differential," and "phase differential," which are included in claims 1 and 4 of the '222 patent in various forms, are implicitly defined throughout the specification and by the claims as referring to distortions of the amplitude and phase characteristics of a transmitted signal caused in transmission over a wireless channel. "[W]hen a patentee uses a claim term throughout the entire patent specification, in a manner consistent with only a single meaning, he has defined that term 'by implication.'" *Bell Atl. Network Servs. v. Covad Communs. Group*, 262, F.3d 1258, 1271 (Fed. Cir. 2001).

The '222 patent explains that when an electromagnetic signal is transmitted through a wireless channel to a receiver, such as when a wireless router transmits information to a laptop computer in a wireless network, the amplitude and phase of the received signal will be different than those of the transmitted signal—that is, there will be a "differential" between the amplitude and phase characteristics of the transmitted and received signals. This differential refers to the distortions that affect the signal as it travels over the air between the transmitter and receiver. (*Haimovich Decl.*, ¶¶53-54.) Examples of distorting effects discussed in the '222 patent include:

- **Multipath Interference**. Upon entering the wireless channel, the electromagnetic signal can encounter physical barriers (e.g., walls, ceilings, buildings) that reflect the signal as it makes its way to the receiver. The end result is that multiple copies of the signal, traveling along paths of different lengths, arrive at the receiver at different times and interfere with one another. This distorting effect is commonly referred to as "multipath." (*See, e.g.*, Ex. A, 7:60-64 ("…a consequence of the multipath nature of the channel …") *emphasis added; Haimovich Decl.*, ¶¶17-19.);

- **Doppler Shift**. If the transmitter and receiver are moving with respect to one another (e.g., as an automobile carrying a passenger using a cellular phone is moving with respect to a stationary communications tower), the relative motion will induce a phase and frequency distortion between the transmitted and received signal, commonly referred to as a "Doppler shift."[3] The received signal will have a different frequency than the transmitted signal. (*See, e.g.*, Ex. A, 6:9-21 ("When there is relative motion between the transmitting transceiver and the receiving transceiver, a Doppler shift occurs with a maximum absolute value |V/λ| … Such a Doppler shift causes a sampling error in the frequency domain…"); *Haimovich Decl.*, ¶¶17-19, 32.);

- **Fading.** In a wideband system, as the electromagnetic signal travels through the wireless channel, it experiences inconsistent fading across its frequency band, resulting in both amplitude and phase <u>distortions</u> in the received signal. (*See, e.g.*, Ex. A, 7:15-17 ("Wideband OFDM forces the channel to be frequency selective and causes two types of linear distortion: amplitude <u>distortion</u> and phase <u>distortion</u>." (*emphasis added*)); 13:45-53 ("One advantage of wideband modulation over narrowband modulation is that the wideband signal does not experience short term fading the same way the narrowband one does. The wideband signal is mainly affected by shadowing and other long term effects which vary slowly and are easily monitored …"); *Haimovich Decl.*, ¶¶17-19.)

To deal with the amplitude and phase distortions introduced by the wireless channel, the W-OFDM system of the '222 patent provides a mechanism for correcting these distortions by pre-distorting the signal (at the transmitter) or post-distorting the signal (at the receiver) so that transmitted information or data symbols modulated on the signal can be correctly recovered. (*See* Ex. A, 3:13-18 ("Advantages of the invention include: … If data is to be exchanged, as opposed to voice, the transceiver preferably contains an estimator to allow pre-<u>distortion</u> and post-<u>distortion</u> of the transmitted signal.").) This mechanism is referred to in the patent specification and claims as a "channel estimator," ("A channel estimator for estimating one or both of the amplitude or phase differential of the received signal ….", *see id.* claim 1) whose operation is described in detail in FIG. 7a and 7b and in columns 10-12 (10:58-12:42), and further discussed in Section V.D, *infra*.

In one embodiment, shown below in FIG. 5b, the channel estimator 530 in the receiver applies an algorithm to the received signal to estimate, or approximate, the amplitude and/or

[3] We experience a similar, related phenomenon when hearing the pitch of a train whistle vary (*i.e.*, distort) as the train moves toward and then away from us.

phase distortions induced by the wireless channel for use in post-distorting the signal to reverse the distortion effects of the channel for the demodulator/decoder 532.

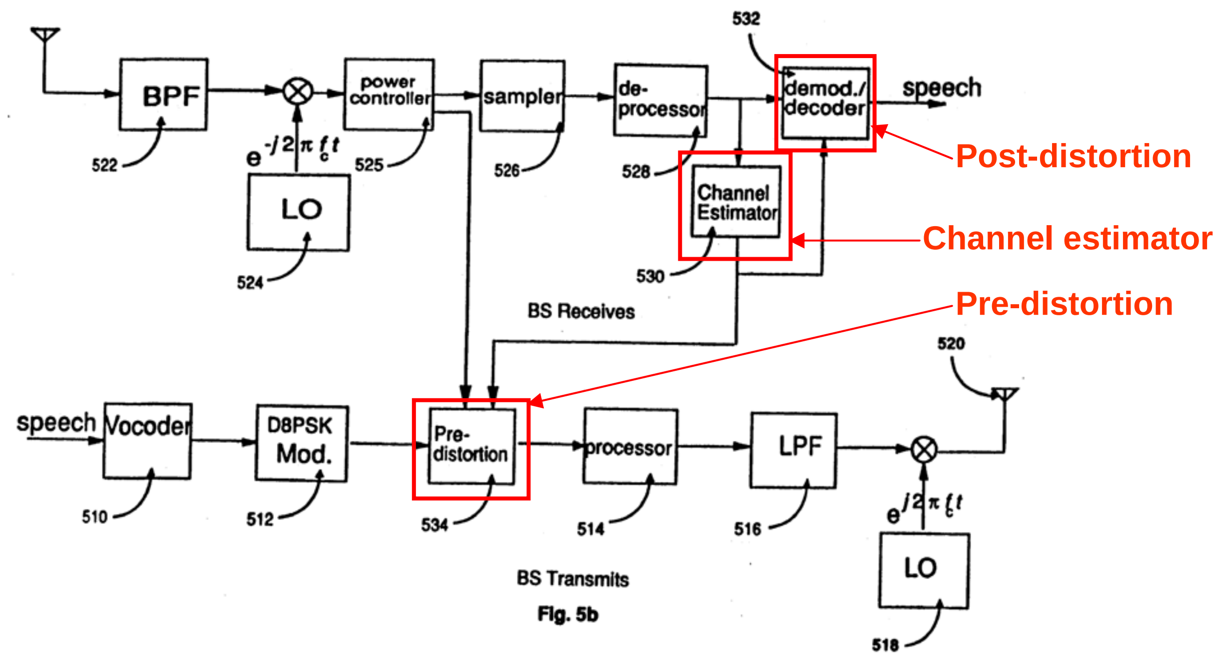


Fig. 5b

> An estimate of the phase differential of the received signal is taken in the channel estimator 530, as described in more detail in relation to FIG. 7a and 7b below, and the estimated phase differential is supplied [for post-distortion of the received signal before demodulation] to a decoder-demodulator 532 to correct the received bits.

(*Id.*, FIG. 5B and 9:43-48 (*annotations and emphasis added*)). In another embodiment shown in FIG. 5b, the channel estimator 530 estimates the distortion over the wireless channel and "pre-distorts" the transmitted signal in a pre-distorter 534 so that the signal at the receiver will be "undistorted":

> The pre<u>distorter</u> 534 receives a signal corresponding to the estimated phase differential of the channel. On the (believed reasonable) assumption that the channel is reciprocal, the signal being transmitted is pre<u>distorted</u> with the estimated phase differential so that the received signal at the portable with which the BS is communicating will be corrected for any phase <u>distortion</u> over the channel.

> "[A] <u>predistorted</u> signal, transmitted by the BS, should reach the portable undistorted."

(*Id.*, 9:56-61 and 8:47-61 (*emphasis added*.) Thus, as demonstrated above, the terms "amplitude and phase differential characteristics" "amplitude and phase differential," and "phase differential" (and variants thereof) in claims 1 and 4 are used in the specification of the '222 patent to describe the distorting effects of the wireless channel on a transmitted signal. (*See, e.g,, Id.*, 6:9-21, 7:15-17, 7:60-64 and 13:45-53.) The claims themselves further demonstrate that Wi-LAN's proposed construction is the proper construction. Claim 4 (which depends from claim 1 and the recited "channel estimator") recites "a pre-distorter … connected to the channel estimator, for pre-<u>distorting</u> a signal to be transmitted with one or both of the estimated amplitude and/or the estimated phase differential." Wi-LAN's proposed construction is correct because it recognizes that the amplitude and phase differential referenced in the claims is the amplitude and phase distortion imparted by the wireless channel.

The defendants' proposed construction, however, seeks to redefine these terms in a nonsensical fashion and, further, improperly seeks to read limitations into the claims. The defendants do so by adding the limitation that the amplitude and phase differential characteristics of the received signal are "resulting from differential modulation." This addition contradicts the explicit teachings of the specification and claims which makes a clear distinction between a modulation scheme, such as differential modulation, which differentially encodes information or data symbols onto signals to be transmitted, and the distorting effects of the wireless channel on the phase and amplitude characteristic of the transmitted signals.

A fundamental flaw in the defendants' construction is that it confuses two processes that are conceptually and physically separate: transmission through the wireless channel and modulation. Modulation is a part of the process of creating the electromagnetic signals that will be transmitted, and modulation must be complete before transmission can occur. (*See, generally, id.*, FIG. 5b, 9:25-32; *annotations and emphasis added*.)

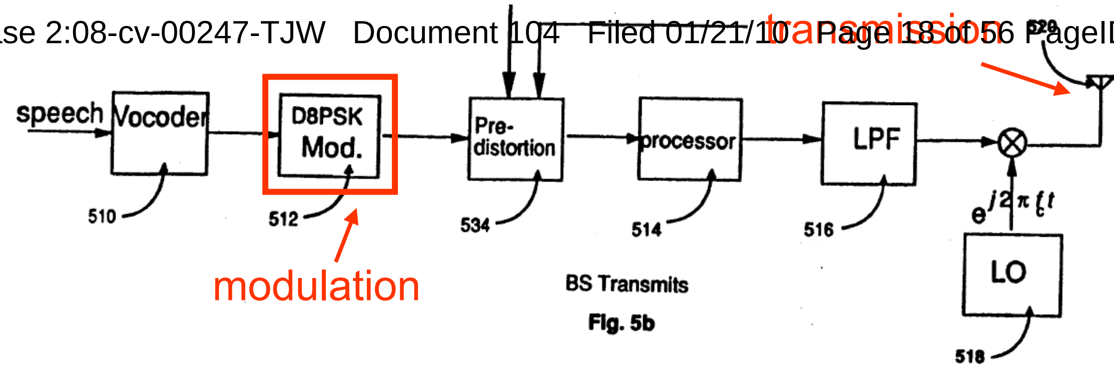


Fig. 5b

Thus, the distortions imparted during transmission through the wireless channel—to which the disputed claim term is directed—are unrelated to the particular modulation scheme used to prepare signals for transmission.

The "resulting from differential modulation" component of the defendants' construction is a reference to the differential phase-shift keying modulation embodiment described in the '222 patent (*id.*, 5:31-35), in which information or data symbols are represented by phase differentials between adjacent signals (or data symbols). Importantly, however, any phase differentials imparted by the modulation process are part of the signal or signals transmitted are but wholly separate from the distortions that the wireless channel inflicts on the transmitted signal. The claim language at issue references the difference between the signal transmitted and the signal received; it is not concerned with the way in which the transmitted signal or signals were constructed (*i.e.*, modulated to carry data symbols). Thus, the defendants' construction is directed to a modulation process separate and distinct from the process that gives rise to the recited "amplitude and phase differential characteristics" and, as such, cannot be correct.

Even assuming that there was some relationship between "amplitude and phase differential characteristics" and defendants' modulation scheme, defendants proposal is misplaced because it seeks to import a limitation from the specification without an express teaching to do so. As mentioned above, absent an express disclaimer by the patentee, it is improper to limit claim terms to preferred embodiments. *Playtex Prods.,* 400 F.3d at 908. This is a result that the inventors clearly did not intend, as they described other forms of modulation, including "quadrature amplitude modulation," that are not differential encoding and the teachings in the patent for W-OFDM are applicable to both differential and non-differential modulation/encoding schemes. (Ex. A, 7:23-28; *see also Haimovich Decl.*, ¶¶28-32, 37-38, 86-

89.) [4] n addition, the claims are not limited to differential encoding. Indeed, claim 1 estimates the amplitude and/or phase distortions of a received OFDM symbol: “a channel estimator for estimating one or both of the amplitude and the phase differential of the received signal ….” (Ex. A, 19:32-35.) The preferred differential phase shift keying modulation scheme varies only the phase of a signal, but other disclosed embodiments, including quadrature amplitude modulation, vary the amplitude. (*Id.*, 7:22-27.)

C. Wideband Frequency Division Multiplexer

Claim Term	Wi-LAN’s Construction	Defendants’ Proposal
wideband frequency division multiplexer for multiplexing information onto wideband frequency channels	a device for placing information onto a number of frequencies (K) having a frequency range between the frequencies (Δf),both large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER	a multiplexer for multiplexing the information onto frequency channels with a K and a Δf large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER

The parties’ proposed constructions for “wideband frequency division multiplexer” are not significantly different and derive from an explicit definition provided for in the specification, more specifically, from the following passages of the ’222 patent:

> Wideband in this patent document is described in the context of Wideband-Orthogonal Frequency Domain Modulation (W-OFDM or wideband OFDM). In OFDM, the entire available bandwidth B is divided into a number of points K [frequencies], where adjacent points are separated by a frequency band [range] Δf, that is B = KΔf.
>
> * * * *
>
> In wideband OFDM, both K and Δf are selected sufficiently large to achieve a high throughput as well as reduce the effects on the BER [bit error rate] of the clock error, the Doppler shift and the frequency offset

[4] The distinction between distortions induced by the wireless channel and modulation is also manifest in the prosecution history too. In the original application, originally filed claim 5 adds to the claimed modulation step of “multiplexing a first frame of information over a number of frequencies within a wideband frequency range at a first transceiver” the limitation “in which each frame of information is differentially encoded.” (Ex. B, W0000536) (*emphasis added*).

> between the LO [local oscillator] in the transmitter and the one in the receiver.
>
> * * * *
>
> In summary, OFDM with a K and a Δf large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER <u>is referred to here as Wideband-OFDM</u>.

(Ex. A, 5:24-29, 55-59, and 6: 30-34, *emphasis added.*) *See Edwards Lifesciences LLC v. Cook, Inc.*, 582 F.1322, 1329 (Fed. Cir. 2009). ("[T]he court will adopt a definition that is different from the ordinary meaning when the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.") The minor differences between the parties proposals are highlighted in the following breakdown:

Wi-LAN	**Defendants**
a device for placing information onto	a multiplexer for multiplexing the information onto
a number of frequencies (K) having a frequency range between the frequencies (Δf), both	frequency channels with a K and a Δf
large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER	large enough to be able to achieve a specific throughput and large enough to be able to avoid using either a clock or a carrier recovery device without substantially affecting the BER

As is readily apparent, the differences between the parties lie in the first and second segments of the proposed constructions. The proposals for the third segment of the construction (derived from the term "wideband") are identical. The differences in the first two portions stem from the construction of the term "frequency division multiplexer" that "wideband" modifies.

One of ordinary skill in the art would interpret "frequency division multiplexer" to be "a device for placing information onto a number of frequencies." (*Haimovich Decl.*, ¶65.) "Frequency division muliplexing" is a method for transmitting information in parallel in the frequency domain by placing information onto a number of frequencies. (*Id.*) This meaning is consistent with the teachings of the specification, as illustrated by the following description of one embodiment of a wideband OFDM system: "To implement wideband modulation in a cellular system with a plurality of portables and one or more base stations, a 100 MHz band [B]

is divided into 4096 points [or frequencies, K], as shown in FIG. 2, plus two tail slots of 195.3 KHz each. The 4096 points represent N voice channels (vc). Adjacent points are separated by 24.414 KHz [Δf] …. FIG. 2 shows that N vc can be transmitted simultaneously. This is known as Frequency Division Multiple Access" (Ex. A, 7:28-33, 8:13-15.) FIG. 2 is reproduced below.

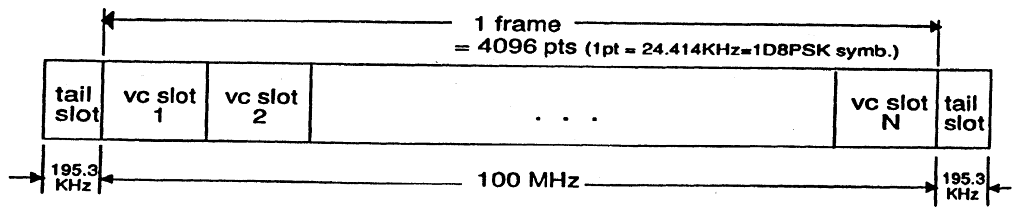


Fig. 2

As for the second segment of Wi-LAN's proposed construction, the difference between the parties is that Wi-LAN defines K and Δf and defendants do not. Wi-LAN believes such definitions are helpful to understand the claim language. The above-quoted language from the specification describes information or data being placed onto frequency channels (or highway lanes) comprised of a number of frequencies (K) where the frequencies are each separated by a frequency range (Δf): "[i]n OFDM, the entire available bandwidth B is divided into a number of points K, where adjacent points are separated by a frequency band Δf, that is B = KΔf" (Ex. A, 5:26-29.) FIG. 2 depicts the concept. The inclusion of the definitions of K ("a number of frequencies") and Δf ("frequency range between the frequencies") are required to properly clarify the meaning of this limitation to a layperson and should be included in the construction.

D. Channel Estimator

Claim Term	Wi-LAN's Construction	Defendants' Proposal
a channel estimator for estimating one or both of the amplitude and the phase differential of the received signal to produce as output one or both of an estimated amplitude and an estimated phase differential respectively	***channel estimator:*** a device for computing the amplitude and/or phase distortions of a received signal	***whole phrase:*** a channel estimator for estimating one or both of the amplitude and the phase differential of the received signals to produce as output one or both of the difference in amplitude or phase between received data symbols ***channel estimator:*** a device for estimating one or both of the amplitude and the phase differential of the received signals to produce as output one or both of the difference in amplitude or phase between received data symbols

The "channel estimator" limitation of claim 1 incorporates versions of the term "amplitude and phase differential" that finds its antecedent basis in the preamble as "amplitude and phase differential characteristics" of the received signal. These terms are already the subject of construction in Section V.B, *supra*. Defendants' construction simply parrots the claim language with one exception—defendants seek to reargue the meaning of these same terms again in the context of the "channel estimator" limitation. Wi-LAN has proposed the term "channel estimator" as the only term in this limitation requiring construction. Wi-LAN's proposal is the proper construction because the only other terms of this limitation that require construction are the amplitude and phase differential terms, which as stated above, are already the subject of construction in Section V.B, *supra*.

As discussed in Section V.B, the "channel estimator" taught in the specification of the '222 patent is the mechanism by which the amplitude and phase distortions that result from transmission of electromagnetic signals across a wideband frequency channel are "estimated" and corrected. The function of the "channel estimator" is clearly spelled out to estimate the "amplitude and phase differential" and to produce as an output "an estimated amplitude and an estimated phase differential" (*see* Ex. A, claim 1) for use, for example, in "a pre-distorter … connected to the channel estimator, for pre-distorting a signal to be transmitted with one or both of the estimated amplitude or the estimated phase differential." (*See id.*, claim 4.) Thus, as explained in detail in Section V.B, the term "amplitude and phase differential" (and

variations thereof in the "channel estimator" limitation) represent distortions in the received signal inflicted by a wireless channel, not a "difference in amplitude or phase between received data symbols," as defendants propose in their construction.

As in Section V.B, the fundamental flaw in defendants' construction is that it again confuses two processes that are conceptually and physically separate in attempt to read limitations into the asserted claims. Channel estimation of the wireless channel (which determines the amplitude and phase distortions in a received signal in order to provide an estimated amplitude or phase differential to the demodulator and a pre-distorter) is distinct and separate from the process of demodulation of the signal. Demodulation is a part of the process of recovering the user <u>information</u> encoded in the "difference in amplitude or phase between received <u>data symbols</u>" after correction for wireless channel-induced phase <u>distortions</u>. (*Haimovich Decl.*, ¶72.) The distinction between the two processes (the process of channel estimation and pre-distortion/post-distortion and the process of demodulation) is illustrated below in FIG. 5b and further described in the specification: "An estimate of the phase differential of the received signal is taken in the channel estimator 530, as described in more detail in relation to FIGS. 7a and 7b below, and the estimated phase differential is supplied [for post-distortion of the signal] to a decoder-demodulator 532 to correct the received bits. The estimate phase differential is also supplied to a pre-distorter 534 in the transmitter." (Ex. A, 9:43-49 and FIG. 5B; annotations and emphasis added.)

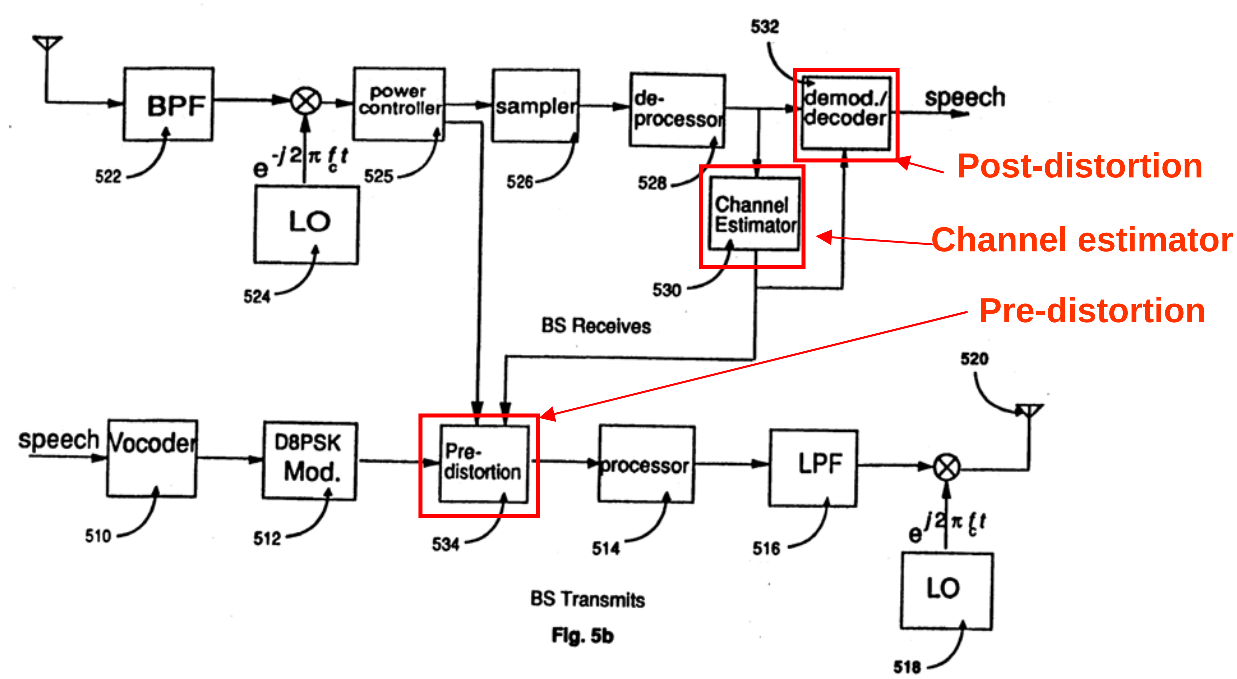


Fig. 5b

Thus, only the term in channel estimator limitation requiring construction is the "channel estimator" itself. Wi-LAN's proposed construction of channel estimator ("a device for computing the amplitude and/or phase distortions of a received signal") is consistent with both the claim language and the passages figures from the specification discussed above, and also with the channel estimation process disclosed in columns 10-12 of the specification and in FIGS. 7a and 7b. (*See, e.g.*, Ex. A, 10:58-60 ("FIG. 7a shows a block diagram … of a preferred channel estimator … [e]ach of the steps is carried out in a computing means …" (*emphasis added*)) *see also* Section V.B, supra.)[5]

E. Points

Claim Term	Wi-LAN's Construction	Defendants' Proposal
points	frequencies	divisions within a frame corresponding to one information symbol each

The term "points" is recited in claim 7 of the '222 patent. Wi-LAN's proposal ("frequencies") for the term is the proper construction because it is consistent with the claim language and the intrinsic record. The defendants' proposal contradicts the language of the claim itself and the teaching of the specification.

In addition to appearing in claim 7 of the '222 patent, the term "points" is used throughout the specification of the patent in a consistent manner. The claims and the written description of the '222 patent make clear that "points" are the individual frequencies into which a wideband frequency band or channel is divided and over which information or data symbols are multiplexed for transmission in a W-OFDM system. (*See, e.g.,* Claim 7 ("multiplexing a first frame of information over a number of <u>frequencies</u> within a frequency band at a first transceiver … in which the frequency band is formed from a first set of K1 points and a pair of tail slots each having K2 points, each of the points being separated by a <u>frequency range</u> of Δf") (*emphasis added*).) The language of claim 7 recites that "the frequency band" (onto which information is multiplexed) is formed from "a first set of K1

[5] Wi-LAN's construction is also consistent with the understanding of a person of ordinary skill in the art, (*Haimovich Decl.*, ¶¶__.)

points" with each of "the points being separated by a frequency range of Δf." This language plainly defines "points" as frequencies within a "frequency band" separated by a frequency range of Δf.

The embodiments of a W-OFDM system presented in the written description are consistent with this meaning: "In OFDM, the entire available bandwidth B is divided into a number of points K, where adjacent points are separated by a frequency band Δf, that is B=K Δf." (*Id.*, 5:26-28; 17:17-19.) FIG. 2 illustrates the "points" as "frequencies" and shows K1 points (4096 points) within a frequency band over which a frame of information is multiplexed and a pair of tail slots having K2 points (or frequencies), each point being separated by a range Δf of 24.414 KHz (with the multiple points of the tail slot spread across 195.3KHz) (*emphasis added*):

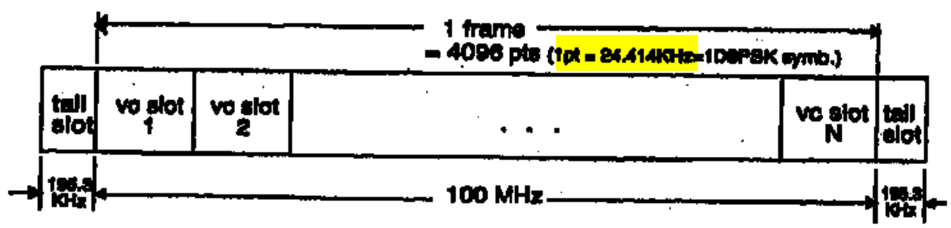


Fig. 2

The proposal by defendants of "divisions within a frame corresponding to one information symbol each" attempts to directly equate "frames of information" with "points" (or frequencies) over which the frames of information are multiplexed—a correlation that does not exist in the claims (specifically claim 7, as these terms are treated as distinct elements of the claim). It's also a correlation that contradicts the language of the claim and the written description. As recited in claim 7, the "frequency band" is composed of "K1 points and a pair of tail slots each having K2 points." Under the defendants' construction, each of the "points" in the "tail slots" would correspond to "an information symbol" or data symbol. However, the "tail slots" taught in the '222 patent are <u>outside</u> of the frame of information and could not correspond

to "an information symbol." This illustrated in FIG. 2, which shows the "tail slots" on the ends being discrete and apart from the 4096 "points" that make up the "frame" (*annotation and emphasis added*):

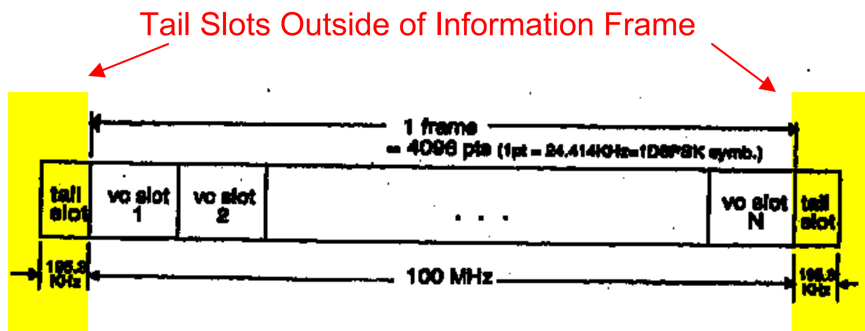


Fig. 2

The distinction between points for the <u>frame</u> and points for the <u>tail slots</u> is further made clear in the following portion of the written description: "The K points are grouped into a <u>frame</u> of K_1 points and <u>two tail slots</u> of K_2 points each, so that $K=K_1 +2K_2$." (*Id.*, 5:29-31, *emphasis added*.) The defendants' proposed construction (which seeks to equate points and frames of information as one in the same) excludes a preferred embodiment and, as such, is not proper. *See Sandisk Corp. v. Memorex Products, Inc.*, 415 F.3d 1278, 1285 (Fed. Cir. 2005).

F. Tail Slots

Claim Term	Wi-LAN's Construction	Defendants' Proposal
tail slots	groups of frequencies that act as guard bands to reduce power outside of the frequency band	divisions within a frame that act as a guard band

The term "tail slots" is also recited in claim 7 of the '222 patent. The parties dispute whether the construction should begin with "groups of frequencies" as Wi-LAN contends, or with "divisions within a frame" as defendants contend. For the same reasons presented above in Section V.E defendants' construction of tail slots ("divisions <u>within</u> a frame that act as a guard band") improperly equates frames of information with points or frequences, when these are two distinct things (tail slots are groups of frequencies outside of the frame).

Claim 7 utilizes tail slots in the following context: "the frequency band is formed from a first set of K1 points and a pair of tail slots each having K2 points." The tail slots are composed of "points." The points are, for each of the reasons set forth in Section V.E, *supra*, "frequencies." The tail slots are, as shown in FIG. 2 (shown above) and FIG. 10, outside and apart from the points that comprise a frame of information. The tail slots are comprised of multiple points or "groups of points" as set forth in Wi-LAN's proposed construction. (*See* Ex. A, FIG. 2 and 7:57-60.) For these reasons, Wi-LAN's proposal for "groups of frequencies" for tail slots is proper, and defendants' proposal of "divisions within a frame" is not. .

The remaining parts of the parties' proposed constructions are not dissimilar. The parties agree that the tail slots act as "guard bands," with Wi-LAN's proposal providing clarification as to the function of the "guard bands"—to reduce power outside of the frequency band.[6] As set forth in the supporting declaration of Dr. Haimovich, wireless communications systems of the type disclosed in the '222 patent will transmit within a given frequency band. (*Haimovich Decl.*, ¶78.) However, because no system is perfect, there is typically some degree of "spill over" from the signal within the frequency band to outside of the frequency band. (*Id.* ¶78.) The '222 patent describes how the effect of this "spill over" can be reduced by incorporating "tail slots" at the boundaries of the frequency band:

> The two tail slots act as guard bands to ensure that the out-of-band signal is below a certain <u>power</u> level. For example, when a pulse P(f) is selected for pulse shaping and the out-of-band signal has to be ydB or less relative to the in-band signal, K_2 is selected such that $20.\log_{10} |P(f)/P(0)| \leq$ for $f \geq K_2 \, \Delta f$.

* * * *

[6] As the '222 patent further discloses, the ability to control the power level outside of the frequency band is critical for meeting the radio regulatory requirements of a given jurisdiction (e.g., FCC regulation):
Also, to allow use of the radio frequency spectrum without obtaining a license in North America, the system must use a spread spectrum and satisfy federal regulations. In part, these regulations impose limits on the <u>power</u> and the frequency spread of the signals exchanged between the transceivers. An object of an aspect of this invention is to satisfy those requirements. (*Id.*, 1:50-56.)

> The two tail slots [in FIG. 2] of 195.3 KHz each (*i.e.* 8 points each) ensure that the signal outside the entire band of 100.39 MHz is below - 50 dB.
>
> (Ex. A, 5:35-37 and 7:57-60.)

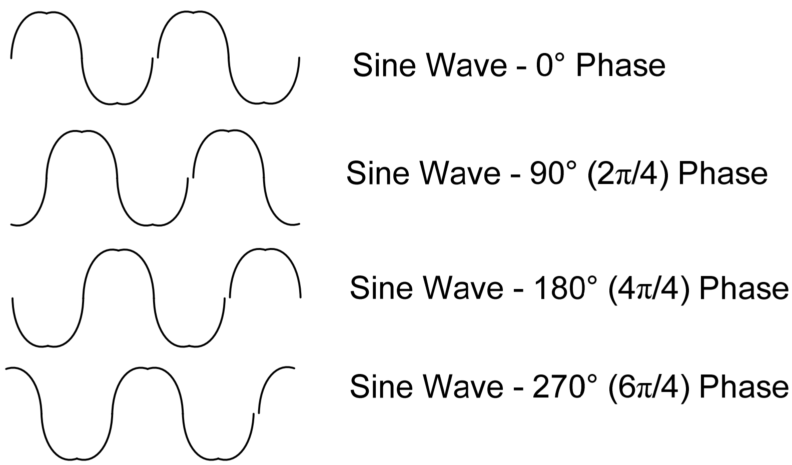
G. A Number M of Levels

Claim Term	Wi-LAN's Construction	Defendants' Proposal
the second transceiver has a maximum expected clock error χT, where T is the duration of one time domain sample, the information is multiplexed over a number M of levels, and K1 selected such that $2\pi\chi/K1<\pi/M$ [claims 7-9]	***a number M of levels:*** a number of distinct phases	the second transceiver has a maximum expected clock error χT, where T is the duration of one time domain sample equal to $1/(K_1\Delta f)$, <u>using multilevel differential phase shift keying with M levels</u> to multiplex the information, where K1 is selected such that $2\pi\chi/K1<\pi/M$

This limitation of the '222 patent incorporates several terms that the parties have identified for construction. For the term χT (the maximum expected clock error), the parties have agreed upon a construction that will be included in the parties' P.R. 4-5(d) submission to the Court. For the phrase "T is the duration of one time domain sample" the defendants seek a construction that restates the claim language and adds the limitation "equal to $1/(K_1\Delta f)$." The defendant's construction of "T is the duration of one time domain sample" is wrong because it attempts to add a limitation from a preferred embodiment to well-defined claim language.

The parties both seek construction of the phrase "a number M of levels" used for modulating the information (or data symbols) recited in the claims. Wi-LAN proposes a construction ("a number of distinct phases") that is consistent with the language of the claim and with the intrinsic record. As with a number of their constructions, defendants propose a construction of "a number of M levels" that improperly seeks to import limitations into the claims from an embodiment in the specification, namely a specific modulation scheme ("using multilevel differential phase shift keying"). This is improper and should be rejected. The '222 patent describes other (non-differential) modulation schemes, including QAM (*i.e.*, quadrature amplitude modulation) and the teachings of the '222 patent apply equally to differential and non-differential modulation schemes. (*See* Ex. A, 7:25-28 and 19:32-35; *Haimovich Decl.*, ¶¶28-32, 37-38, 86-88.) Indeed, a common thread in these modulation

schemes is that information or data symbols are encoded using different phases or (in the case of differential modulation) the difference in phases among adjacent signals or frequencies used for transmission. (*Id.*, ¶¶86-88.) Any number of phases can selected from 0 degrees to 360 degrees (2π) for encoding data symbols. (*Id.*) The following diagram illustrates the concept of phase modulation with four different phases used to encode the data symbols, each phase encoding a different data symbol:



See also Ex. A, 7:33-39 ("… Φ(n) takes one of the eight values {0, 2π/8, 4 π /8, . . . 14 π /8}…").) However, the inventors discovered that phase distortions induced during transmission or during processing at the receiver can rotate (distort) the phases of such signals or frequencies leaving the receiver unable to recover the encoded data symbols during demodulation (e.g., 2π/4 can be rotated in phase to look like 4π/4 in the above illustration). The '222 patent describes how a sampling clock error at the receiver will induce such a shift in the phase of a received signal during processing. (Ex. A, 5:65-67, 13:5-7; *see also Haimovich Decl.*, ¶¶86-88.)

Claim 7 is directed to a method for dealing such phase-induced clock error. As quoted above, claim 7 includes a formula ($2\pi\chi/K_1<\pi/M$) that, if followed, protects a receiver from clock error-induced phase distortions. (*See* Ex. A, 5:65 to 6:l-8 and 7:3-10.) The inventors discovered that by selecting an appropriate number of phase levels M for encoding data symbols at the transmitter and an appropriate number of number of frequencies K1 (highways lanes) for transmitting such phase encoded data symbols (whether differential or non-differentially phase

encoded) the effects of phase distortions induced by an expected sample clock error can be minimized. (*Haimovich Decl.,* ¶¶86-88.) Accordingly, Wi-LAN's construction of a "number M of levels"—a number of distinct phases—is consistent with the claim language and the teachings of the '222 patent regarding the recited formula.

As discussed above, the defendants' proposal for "a number of M levels" does not actually construe the term but again tries to import a modulation scheme limitation from the specification, namely "using multilevel differential phase shift keying." As discussed in Section x.B, *supra*, in the context of defendants' attempts to import the limitation "resulting from differential modulation" into the term "amplitude and phase differential characteristics" (and variations thereof), the specification and prosecution history run counter to any notion that the inventors intended to have their claims limited to any specific form of data symbol encoding/modulation. There is no declaration (express or otherwise) that the inventors intended the W-OFDM invention of the '222 patent to be so limited.

Similarly, the defendants do not actually construe "T is the duration of one time domain sample," a term that is well-defined in the plain language of the claim, but instead attempt to limit the term to the preferred embodiment with the addition of "equal to $1/(K_1\Delta f)$." Once again, there is no declaration that the inventors intended the invention to be so limited.

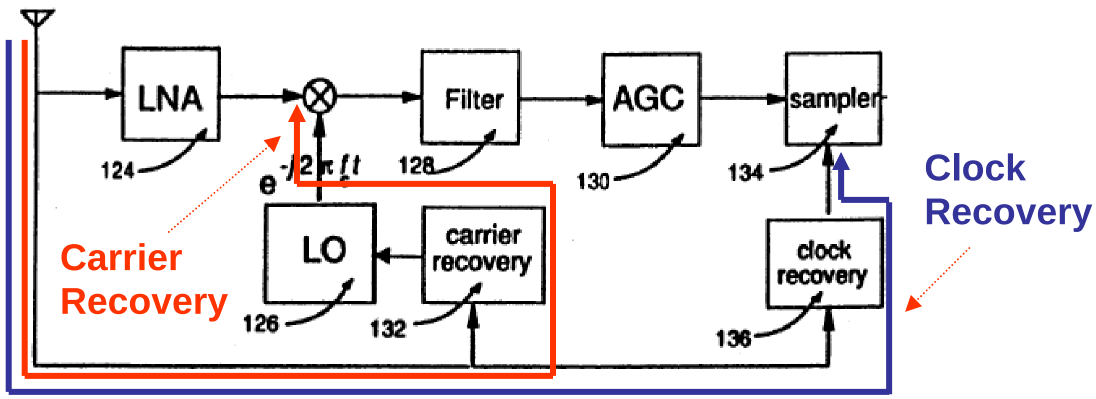
H. Carrier Recovery / Clock Recovery

Claim Term	Wi-LAN's Construction	Defendants' Proposal
carrier recovery	synchronizing the local oscillator to the carrier frequency of the received signal	recovery of the carrier signal
clock recovery	synchronizing the sampling clock to the timing of the received signal	recovery of the clock

The terms "carrier recovery" and "clock recovery" are recited in claim 7 of the '222 patent and in the parties' proposed constructions for the "wideband frequency division multiplexer" limitation of claim 1. See Section V.C, *supra*. Wi-LAN's proposal construes these terms in accordance with the intrinsic record and extrinsic support. The defendants' proposal is unhelpful because it merely rearranges the words in the terms.

"Carrier recovery" and "clock recovery" are used in the '222 patent to mean "synchronizing the local oscillator …" and "synchronizing the sampling clock …" to the carrier frequency and timing of the received signal, respectfully. The terms are implicitly defined in the context of the prior art receiver shown in FIG. 1b, excerpted and reproduced below.

.



RECEIVER
Fig. 1b Prior Art

The annotated figure shows the frequency ($e^{-j2\pi fct}$) of the LO (local oscillator) being synchronized to the carrier frequency of the received signal through the carrier recovery device 132. (*Haimovich Decl.*, ¶¶90-93.) The figure also shows the incoming signal being downconverted using the frequency generated by the LO before filtering and further processing. (*Id.*) The converse process occurs at the transmitter — the signal to be transmitted is upconverted by the frequency generated by the transmitter's LO (local oscillator). (*Id.*, ¶¶12, 90-93.) When the local oscillator is synchronized to the carrier frequency of the received signal using carrier recovery, the difference (or frequency offset) between the LO frequency used to upconvert (at the transmitter) and the LO frequency used to downconvert (at the receiver) is minimized, resulting in the downconverted signal having the appropriate frequency characteristics for deprocessing and demodulation. (*Id.*, ¶¶90-93.)

Similarly, the annotated figure shows the sampling clock 134 being synchronized to the timing of the received signal through clock recovery. (*Id.*) When the sampling clock is synchronized to the timing of the received signal using clock recovery, the difference (or clock

error) between the timing (frequency) in the transmitter (and, consequently in the transmitted signal) and the sampling frequency in the receiver is minimized, resulting in the sampled signal at the receiver having the appropriate frequency characteristics for deprocessing and demodulation. (*Id.,* ¶¶101-104)

This figure serves to implicitly define "carrier recovery" and "clock recovery," *Bell Atl. Network Servs., Inc. v. Covad Comm. Group, Inc.,* 262 F.3d 1258, 1271 (Fed. Cir. 2001), in a manner that is consistent with the understanding of one ordinary skill in the art and with the extrinsic evidence. Authoritative textbooks confirm that "carrier recovery" is synchronizing the local oscillator to the carrier frequency of the received signal, and that "clock recovery" is synchronizing the sampling clock to the timing of the received signal. For example, the textbook *Synchronization in Digital Communications* provides the following definitions for clock recovery and carrier recovery and notes that "clock synchronization" is "[a]lso called timing/clock recovery or symbol/bit synchronization" (Ex. D., pg. 5) :

> **Clock synchronization.** The function of adjusting the clock of the receiver, which controls the sampling of the input signal, to the clock of the transmitter running at symbol rate
>
> **Carrier synchronization.** The function of aligning the phase and frequency of the receiver oscillator with that of the transmitter oscillator if the bit stream is modulated onto a carrier.
>
> (*Id.*, pg. xiii.)

The textbook *Electronic Communication Systems* ("the Tomasi textbook") also teaches that carrier recovery is synchronizing the local oscillator and clock recovery is synchronizing the sampling clock as proposed in Wi-LAN's constructions:

> **Clock Recovery** … As with any digital system, digital radio requires precise timing or clock synchronization between the transmit and the receive circuitry. Because of this, it is necessary to regenerate clocks at the receiver that are synchronous with those at the transmitter.
>
> * * * *
>
> **Carrier Recovery** … To determine the absolute phase of the received signal, it is necessary to reproduce a carrier [frequency] at the receiver that is phase coherent with the transmit reference oscillator."

(Ex. E, pg. 529 and 532; *Haimovich Decl.*, ¶¶95, 108.) Finally, the treatise by the defendants' own expert, John G. Proakis, *Digital Communications* ("the Proakis textbook"), teaches that carrier synchronization (a term used interchangeably with carrier recovery in his book[7]) "allows the receiver to extract and, thus, to synchronize its local oscillator to the carrier frequency of the phase of the received signal." (Ex. F, pg. 304.) The Proakis textbook also teaches that clock recovery is synchronizing the sampling clock, referring to clock recovery as "symbol synchronization." The "Carrier and Symbol Synchronization" section notes that "symbol timing must be derived from the received signal for both coherent and noncoherent modulation in order to synchronously sample… at the proper instant." (*Id.*, pg. 303.)

Wi-LAN proposes constructions for "clock recovery" and "carrier recovery" because they are technical terms with specific meanings to one of ordinary skill in the art, whereas defendants avoid construction by merely rearranging the words and thus defendants' construction should be rejected.

I. Out of Band Signal

Claim Term	Wi-LAN's Construction	Defendants' Proposal
the method of claim 7 in which K2 is selected so that the out of band signal is less than a given level [claim 9]	***out of band signal:*** power outside the frequency band	***whole phrase:*** invalid for failure to meet 35 U.S.C. § 112 ***out of band signal:*** invalid for failure to meet 35 U.S.C. § 112

Wi-LAN proposes a construction for the term "out of band signal" that is consistent with the intrinsic record, and Defendants do not. Defendants contend instead that this is definite. [8]

[7] For example, a carrier synchronization method described on page 305 appears as "carrier recovery" in accompanying Fig. 4.5.1 on page 306. Also, looking up the term "carrier recovery" in the index on pg. 896 directs one to the "carrier synchronization" section.

[8] Defendants' argue that this term ("out of band signal") renders claim 9 indefinite and invalid. However, patents are presumed valid under 35 U.S.C. § 282, and Defendants must demonstrate by clear and convincing evidence that the patent is invalid. *See ICU Med., Inc. v. Alaris Med. Sys.*, 558 F.3d 1368, 1376 (Fed. Cir. 2009). Because it is Defendants' burden to overcome this strong presumption, Wi-LAN will not further address Defendants' invalidity arguments, including because Defendants have provided Wi-LAN with no basis for such arguments in its invalidity contentions or otherwise and thus such arguments are not properly raised.

As an initial matter, the express language of the claim and the teachings of the specification make clear the meaning of the term "out of band signal." As discussed in Section V.F, *supra*, with respect to "tail slots," one aspect of the invention is to be able to spread signals across a frequency band for transmission, while maintaining regulatory-imposed power levels, both within the frequency band for which the signals are intended for transmission and outside of that frequency band. (*See, e.g.,* Ex. A, 1:50-56; 5:36-38; *see also Haimovich Decl.*, ¶¶81-82, 111-112.) The patent teaches the use of tail slots to reduce the out-of-band power (a buffer to minimize or prevent interference between adjacent frequency bands carrying frames of information), with there being a direct correlation between the width (in frequency) of the tail slots and the power from within the frequency band that will leak outside of the band:

> The two tail slots act as guard bands to ensure that the out-of-band signal is below a certain <u>power</u> level. For example, when a pulse P(f) is selected for pulse shaping and the out-of-band signal has to be ydB or less relative to the in-band signal, K_2 is selected such that $20.\log_{10} |P(f)/P(0)| \leq$ for $f \geq K_2\ \Delta f$.
>
> * * * *
>
> The two tail slots of 195.3 KHz each (*i.e.* 8 points each) ensure that the signal outside the entire band of 100.39 MHz is below -50 dB.

(Ex. A, 5:35-37 and 7:57-60, *emphasis added*.) Wi-LAN's proposed construction of out of band signal—power outside the frequency band—is consistent with the claim language and with the specification of the '222 patent, and would be understood as such by one of ordinary skill in the art. (See *Haimovich Decl.*, ¶¶81-82.)

VI. THE '802 PATENT TEACHES MULTICODE DIRECT SEQUENCE SPREAD SPECTRUM

The '802 patent is a continuation-in-part of the '222 patent and also deals with the field of multiple access communications using Spread Spectrum modulation. (Ex. M, 1:8-15.) The '802 patent more broadly extends the patented W-OFDM Spread Spectrum system of the '222 patent (which, as discussed above, spreads a user's data symbols over multiple orthogonal

frequencies for transmission over a single communication channel or link).[9] For example, the ’802 patent claims the use of a Fourier transform (which is used in the ’222 patent’s W-OFDM system) to spread a user’s data symbols. (*Id*., claims 5-8, 26-28.) A commonly used spread spectrum technique is Direct Sequence Spread Spectrum (DSSS), which is a communications scheme in which information is spread over code bits of an invertible code. (*Id*., 1:21-27.) These code bits are generally known in the art as chips. (*Id*.) A limitation of prior art DSSS systems is the limited throughput they can offer. (*Id*., 1:48-49.) To enhance throughput, the ’802 patent teaches the use of more than one code at the same time for a single user link (*i.e.*, a single transceiver). (*Id*., 2:3-5.) The multiple codes function to divide a communication channel or link for a user into multiple “highway lanes” for carrying a user’s data, increasing the information throughput for the user with each additional code used in the spreading operation. The patent refers to this invention as Multi-Code Direct Sequence Spread Spectrum (MC-DSSS), which the patent describes as a modulation scheme that assigns up to N codes to an individual transceiver for a user where N is the number of chips per DSSS code. (*Id*. 2:6-10.) The patented W-OFDM system of the ’222 patent is included in the ’802 patent as one embodiment of an MC-DSSS system. (*Id*., 5:7-12; claims 5-8, 26-28.)

VII. PROPOSED CONSTRUCTIONS FOR THE ’802 PATENT

A. Transceiver

Claim Term	Wi-LAN’s Construction	Defendants’ Proposal
transceiver	a two-way radio unit	link

Wi-LAN’s construction for “transceiver” for the ’802 patent is the same as its construction for “transceiver” for the ’222 patent, while Defendants propose a construction that is entirely different from their construction for the ’222 patent. The Defendants’ inconsistent constructions are inappropriate given that the ’802 patent is a continuation-in-part of the ’222 patent. (Ex. M, 1:8-12; 5:7-12.) Claim terms should be construed consistently across a family of patents. *See NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1293 (Fed. Cir. 2005)

9 The ‘802 patent describes and claims other inventions discussed below in this brief that make implementation of the patented MC-DSSS system commercially viable.

("Because [the] patents[in-suit] all derive from the same parent application and share many common terms, we must interpret the claims consistently across all asserted patents."). Moreover, Wi-LAN's construction is consistent with the '802 patent which describes a transceiver for transmitting and receiving at radio frequency ("RF") using an "antenna"—in other words, a two-way radio unit. (Ex. M, claim 17; 6:20-23; 6:37.) Accordingly, Wi-LAN's proposal is consistent with the intrinsic record and ordinary meaning as explained above with respect to the '222 patent and should be adopted.

In contrast, Defendants' proposal merely pulls a single word from the '802 specification and takes the language of the specification out of context. (*Id.*, 2:3-5 ("[W]e allow a single <u>link</u> (*i.e.* a single transceiver) to use more than one code at the same time") (*emphasis added*).) Contrary to Defendants' proposal, the patentee has not redefined the meaning of "transceiver" in this sentence. Indeed, Defendants' proposal is nonsensical because a "transceiver" is a physical device, while a "link" is a term referring to the communications channel in a communication system over which the transceiver communicates with other devices. (*See, e.g.*, Ex. P, NEWTON'S TELECOM DICTIONARY (9th ed. 1995), pg. 664 ("LINK 1. Another name for a communications channel or circuit.").) The '222 patent makes clear the distinction between the physical transceiver itself and the intangible communication link over which the transceiver communicates a user's information. (Ex. A, Abstract.) Given that the claims of the '802 patent recite elements of an apparatus, "transceiver" must be construed as a physical device and not something intangible like a "link."

B. Converter[10]

Claim Term	Wi-LAN's Construction	Defendants' Proposal
a <u>converter</u> for converting the first stream of data symbols into plural sets of N data symbols each a <u>converter</u> for converting the first stream of data symbols into plural sets of data symbols each Note: Wi-LAN only proposes the underlined term for construction	**converter:** a device that accepts data in one form or mode and changes it to another Alternatively, should the Court construe this element pursuant to 35 U.S.C. § 112(6): Corresponding Structure: i) element 10 in FIG. 1 including corresponding descriptions in the specification (col. 4:1-2 and 2:36-40); ii) element 10 in FIG. 4 including corresponding descriptions in the specification (col. 4:1-2 and 2:58-62); and equivalents thereof.	This element should be construed in accordance with 35 U.S.C. § 112(6). **Structure:** FIG. 1 (item 10), FIG. 4 (item 10), and col. 4:1-2

The parties dispute whether the "converter" terms should be construed under 35 U.S.C. § 112(6). Defendants' proposal that the term should be construed under § 112(6) is improper given the presumption that this is not a means-plus-function term and the fact that "converter" is a well known structural element that has a generally understood structural meaning in the art. As an initial matter, this claim term "is presumptively not subject to 112 P6 because it does not contain the term 'means.'" *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1353 (Fed. Cir. 2006).[11] Notably, the patentee used the term "means" in other claim elements of Claim 1 (*i.e.* "first computing means" and "means to combine"), showing that the patentee understood how to use the term "means" when the patentee wished to invoke § 112(6).

Furthermore, this is not a case where "the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function." *Id.* (internal quotation marks omitted). Rather, the term "converter" is a well known structural element that has a generally understood structural meaning in the art as confirmed by the dictionary definitions. (*See, e.g.,* Ex. Q, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (10th ed. 1994), pg. 254 ("converter - (d) a device that accepts data in one form and converts it to

[10] Because the parties agree on the recited functions, Wi-LAN refers the Court to the joint claim construction statement for the recited function for each of the means-plus-function terms. *See* 2:08-cv-00247, Dkt. No. 100-2, 100-3.

[11] *See also Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004) ("[T]he presumption flowing from the absence of the term "means" is a strong one that is not readily overcome.").

another"); Ex. R, THE IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONICS TERMS (6th ed. 1996), pg. 222 ("converter - (9) A device capable of converting impulses from one mode to another, such as analog to digital, parallel to serial, or from one code to another.").)[12] Additionally, a person of ordinary skill understands that "a converter" has a generally understood structural meaning in the art that is consistent with the dictionary definitions: "a device that accepts data in one form or mode and changes it to another." (*Gitlin Decl.*, ¶ 21.) Moreover, a person of ordinary skill understands that "a converter" recites sufficient structure to perform the function of "converting the first stream of data symbols into plural sets of N data symbols each." *Id*. A serial-to-parallel converter is one example of a converter that can perform this function. *Id*.

However, if the Court does decide that the presumption that this is not a means-plus-function term is overcome, the parties largely agree on the corresponding structure. The sole disagreement between the parties regarding corresponding structure is that Wi-LAN identifies two additional descriptions from the specification: (Ex. M, 2:36-40 and 2:58-62.) Both of these descriptions from the specification should be included in the corresponding structure as they mathematically describe element 10 in FIG. 1 and element 10 in FIG. 4, respectively (which the parties agree are corresponding structure). (*Id.*, 2:38-40 ("Sym(k)=[sym(1,k) sym(N,k)] is the kth information-bearing vector containing N symbols."); 2:60-62 ("Sym(k)=[Sym(1,k)Sym(2k) . . . Sym(N,k)] is the kth information-bearing vector contacting N symbols.").) Accordingly, the structure described at 2:36-40 and 2:58-62 is clearly linked to the "converter" and should be included as corresponding structure if the Court finds that § 112(6) applies. In addition, Defendants' construction fails to include language that makes clear that the literal scope of a means-plus-function claim element under § 112(6) also includes "equivalents" of the corresponding structure. *See* 35 U.S.C. § 112(6) ("An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of

[12] Notably, the dictionaries relied on by the Defendants include similar definitions of "converter" and also confirm that the term has a well known structural meaning. (*See* Ex, S, IBM, VOCABULARY FOR DATA PROCESSING TELECOMMUNICATIONS, AND OFFICE SYSTEMS (7th ed. 1981) pg. 94; Ex. T, JONAR C. NADER, DICTIONARY OF COMPUTING (1992), pg. 96.

structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.") (emphasis added). Thus, Wi-LAN includes "and equivalents thereof" in its proposed constructions for each claim term that is construed in accordance with § 112(6).

C. First Computing Means

Claim Terms	Wi-LAN's Construction	Defendants' Proposal
first computing means for operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols first computing means for operating on the plural sets of N data symbols to produce sets of modulated data symbols corresponding to an invertible randomized spreading of each set of N data symbols over more than one and up to M direct sequence spread spectrum codes	Wi-LAN contends that this claim element should be governed by 35 U.S.C. § 112(6) **Corresponding Structure:** i) element 12 in FIG. 1 including corresponding descriptions in the specification (col. 2:6-10, 2:36-40, 4:2-4:12 and 4:35-38); ii) element 12 in FIG. 4 including corresponding descriptions in the specification (col. 2:6-10, 2:58-62, 4:39-44, and 4:66-5:12); iii) a computing device programmed to perform the algorithms disclosed by the foregoing; and equivalents thereof.	The parties agree that this claim element should be construed in accordance with 35 U.S.C. § 112(6). **Structure:** FIG. 1 (item 12), FIG. 4 (item 12), and cols. 2:6-10, 2:36-40, 2:58-62, 4:2-12, 4:35-44 LG Electronics cites additional structure: FIG. 3 and cols. 2:54-57, 4:29-39, 4:66-5:7
first computing means for operating on the plural sets of data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols over more than one and up to M direct sequence spread spectrum codes, where each direct sequence spread spectrum code has M chips	Wi-LAN contends that this claim element should be governed by 35 U.S.C. § 112(6) **Corresponding Structure:** i) element 12 in FIG. 1 including corresponding descriptions in the specification (col. 2:6-10, 2:36-40, 4:2-4:12 and 4:35-38); ii) element 12 in FIG. 4 including corresponding descriptions in the specification (col. 2:6-10, 2:58-62, 4:39-44, and 4:66-5:12); iii) a computing device programmed to perform the algorithms disclosed by the foregoing; and equivalents thereof.	**Structure:** invalid for failure to meet 35 U.S.C. §112, if M does not equal N Alternatively, closest structure: FIG. 1 (item 12), FIG. 4 (item 12), and cols. 2:6-10, 2:36-40, 2:58-62, 4:2-12, 4:35-44 LG Electronics cites additional structure: FIG. 3 and cols. 2:54-57, 4:29-39, 4:66-5:7

The parties agree that the "first computing means" terms should be construed under § 112(6).[13] Additionally, the parties agree that the corresponding structure includes element 12 in

[13] Defendants' argue that the third "first computing means" claim term is invalid. Defendants' also argue that the terms "source," "transformer," "correlator" and "modulator" are invalid. However, patents are presumed valid under 35 U.S.C. § 282, and Defendants must demonstrate by clear and convincing evidence that the patent is invalid. *See ICU Med., Inc. v. Alaris Med. Sys.*, 558 F.3d 1368, 1376 (Fed. Cir. 2009). Because it is Defendants' burden to overcome this strong presumption, Wi-LAN will not further address Defendants' invalidity arguments, including

FIG. 1, element 12 in FIG. 4, and cols. 2:6-10, 2:36-40, 2:58-62, 4:2-12, and 4:35-44 (but, in contrast to Defendants' proposed construction, Wi-LAN seeks in its construction to avoid confusion by associating the description citations to the corresponding element in each figure). The parties dispute whether the corresponding structure includes the additional description from the specification at 4:66-5:12. The parties also dispute whether the corresponding structure includes "a computing device programmed to perform the algorithms disclosed by the foregoing."

The corresponding structure for the "first computing means" includes the description at 4:66-5:12 which begins: "Examples of the N-point transforms in FIG. 3 are . . . ." (Ex. M, 4:66.) This description in the specification provides examples of the N-point transforms that can be implemented as elements 20 (N-point transforms) that are illustrated within element 12 in FIG. 4 (which the parties agree is corresponding structure). The specification explains that the N-point transforms in FIG. 3 can be used in FIG. 4. (*Id.*, 4:38-39 ("An alternative transmitter to the one in FIG. 1 using the MC codes in FIG. 3 is shown in FIG. 4."); *Gitlin Decl.*, ¶ 29.) Thus, the specification makes clear to one of ordinary skill that the N-point transforms are not just used in FIG. 3 but can also be used in FIG. 4. (*Id.*) Accordingly, the structure described at 4:66-5:12 is clearly linked to the "first computing means" and should be included as corresponding structure. Notably, Defendant LG Electronics agrees with Wi-LAN that this <u>is</u> corresponding structure.

Additionally, the corresponding structure includes "a computing device programmed to perform the algorithms disclosed by the foregoing." As was the case in *In re Dossel*, 115 F.3d 942 (Fed. Cir. 1997), the transceiver claimed by the '802 patent which performs complex mathematical computations can be implemented by or on a general or special purpose computer. *Id*. at 946-47 ("Clearly, a unit which receives digital data, performs complex mathematical computations and outputs the results to a display must be implemented by or on a general or special purpose computer . . . ."); *see also Gitlin Decl.*, ¶ 19.) Furthermore, "the corresponding

because Defendants have provided Wi-LAN with no basis for such arguments in its invalidity contentions or otherwise and thus such arguments are not properly raised.

structure for a § 112 P 6 claim for a computer-implemented function is the algorithm disclosed in the specification." *Aristocrat Techs. Austl. PTY Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1334 (Fed. Cir. 2008) (quoting *Harris Corp. v. Ericsson Inc.*, 417 F.3d 1241, 1253 (Fed. Cir. 2005)). In addition to providing corresponding structure in and of themselves, elements 12 in FIGS. 1 and 4 and the corresponding descriptions in the specification disclose an algorithm that can be implemented by a computing device to implement the transceiver claimed by the '802 patent. (*Gitlin Decl.*, ¶ 19.) Accordingly, the corresponding structure for the "first computing means" includes "a computing device programmed to perform the algorithms disclosed by the foregoing."[14]

D. Spreading

Claim Term	Wi-LAN's Construction	Defendants' Proposal
spreading	modulating data symbols by codes of larger bandwidth	distributing information bits over code chips thereby reducing the effective bandwidth

Defendants' proposal improperly construes "spreading" as "distributing," while Wi-LAN's construction confirms that "spreading" is "modulating." Wi-LAN's construction is consistent with the intrinsic record and supported by the extrinsic evidence. First, the specification explains "spreading" as using a modulator to <u>modulate</u> each data symbol with a code symbol and thereby spread each data symbol over a separate code symbol: "modulator 18 to <u>modulate</u> each ith data symbol from each set of N data symbols with the I code symbol from the N code symbol . . . and thereby <u>spread</u> each I data symbol over a separate code symbol." (Ex. M, 4:9-12 (emphasis added)). Importantly, the specification does not define "spreading" as "distributing" as the Defendants propose, but makes clear that spreading is "modulating data symbols by codes," consistent with Wi-LAN's construction. Second, the extrinsic evidence is

[14] Wi-LAN disagrees with LG Electronics' proposal that fig. 3 and cols. 2:54-57, and 4:29-39 should be included as corresponding structure. "FIG. 3 illustrates the code generator of the MC codes." (Ex. M, 4:29.) The code generator is not clearly linked structure for the "first computing means," and including such structure would serve to read an additional functional limitation into the first computing means (*i.e.*, "generating multiple codes") that is not present. (*See id.*, claim 1.) It is the structure that actually performs the recited function in the claim that is corresponding structure. *See Omega Engineering, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1321 (Fed. Cir. 2003) ("[T]he structure must be necessary to perform the claimed function.")

consistent with Wi-LAN's construction and confirms that the codes have a wider or larger bandwidth. (*See, e.g.*, Ex. P, NEWTON'S TELECOM DICTIONARY (9th ed. 1995), pg. 1057 ("SPREAD SPECTRUM Also called frequency hopping, spread spectrum is a modulation technique in which the information content is spread over a wider bandwidth than the frequency content of the original information."); Ex. F, JOHN G. PROAKIS, DIGITAL COMMUNICATIONS, pg. 800 (2d ed. 1989) ("Spread spectrum signals used for the transmission of digital information are distinguished by the characteristic that their bandwidth W is much greater than the information rate R in bits per second."); Ex. C, THE NEW IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONICS TERMS (5th ed. 1993), pp. 1265-66 ("Spread spectrum systems makes use of a sequential noise-like signal structure, for example P.N. (pseudonoise) codes, to spread the normally narrowband information signal over a relatively wide band of frequencies."); *see also Gitlin Decl.*, ¶ 22.)

Defendants' proposal includes additional inconsistencies with the specification and the extrinsic evidence. Defendants' proposal appears to be based on the statement in the "Background of the Invention" section of the specification that "[a]n obvious limitation of DSSS systems is the limited throughput they can offer. In any given bandwidth, B, a code of length N will <u>reduce the effective bandwidth</u> to B/N." (Ex. M, 1:48-50 (*emphasis added*).) However, Defendants fail to appreciate that this statement describes the prior art DSSS systems and not the invention claimed by the '802 patent. The patent clarifies that the effective bandwidth of the system claimed by the '802 patent need not be reduced: "To enhance the throughput, we allow a single link (*i.e.*, a single transceiver) to use more than one code <u>at the same time</u> . . . . In this patent, we present Multi-Code Direct Sequence Spread Spectrum (MC-DSSS) which is a modulation scheme that assigns up to N codes to an individual transceiver where N is the number of chips per DSSS code." (*Id.*, 2:3-10.) Thus, by using more than one and up to N codes for a single link, the '802 patent avoids the obvious limitation of DSSS systems that reduces the effective bandwidth. Indeed, Defendants' proposal would exclude preferred embodiments of the patent where the number of codes is equal to the number of chips—embodiments where the effective bandwidth is not reduced. *See MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d

1323, 1333 (Fed. Cir. 2007) ("[A] claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.") (internal quotation marks omitted); *see also Gitlin Decl.*, ¶ 22. Defendants' proposal would also exclude a claimed and preferred embodiment using a Fourier transform for spreading with multiple orthogonal frequencies as in the W-OFDM system of the '222 patent—another embodiment of the '802 patent where the effective bandwidth is not reduced. (Ex. M, 5:7-12; Claims 5-8, 26-28; Ex. A, 1:2-5 and 2:47-50; *Gitlin Decl.,* ¶ 22.

E. Invertible Randomized Spreading

Claim Term	Wi-LAN's Construction	Defendants' Proposal
invertible randomized spreading	spreading and applying complex constants chosen randomly, in a manner that is invertible	spreading using an invertible randomized transform LG Electronics' proposal: spreading using an invertible randomizer transform

Defendants' proposal limits spreading to "using an invertible randomized transform," while Wi-LAN's construction, consistent with the specification, clarifies the meaning of "randomized." Wi-LAN's construction is supported by the specification and prosecution history. The patent specification explains that "randomized" refers to applying "complex constants chosen randomly," just as Wi-LAN proposes. (Ex. M, 3:12-14 ("FIG. 8 is a schematic showing the Randomizer Transform (RT) where a (1) a (2) . . . a (N) are complex constants chosen randomly.").) Furthermore, the specification, like Wi-LAN's construction, is clear that randomization is not spreading (as Defendants' construction implies) and that the result of both spreading and randomization is invertible (not just randomizing as Defendants' construction implies). (*See id.*, 4:29-32 and 4:66-5:7 ("Any one of the P N-point transforms in FIG. 3 consists of a reversible transform to the extent of the available arithmetic precision. . . . Examples of the N-point transforms in FIG. 3 are a Discrete Fourier Transform (DFT), . . . a Walsh Transform (WT), . . . a Randomizer Transform (RT) . . . and any other reversible transform."); *Gitlin Decl.*, ¶ 23.) Accordingly, Wi-LAN's construction should be adopted because it clarifies what is meant by "randomized," including that randomizing is not spreading, and because it makes clear that the result of both the spreading and randomization is invertible.

Defendants' proposal is incorrect for several reasons including those noted above. First, their proposal suggests that spreading is performed using a "randomized transform" or a "randomizer transform." This is inconsistent with the '802 specification and both of the parties' constructions for "spreading." Both of the proposed constructions for "spreading" confirm that the spreading operation involves a change in the bandwidth. However, the "randomizer transform" disclosed in FIG. 8 of the patent does not involve any change to the bandwidth. (*Gitlin Decl.*, ¶ 23.) Moreover, the specification discloses the use of Fourier Transforms and Walsh codes or transforms for spreading. (*See* Ex. M, 4:66-5:7; *Gitlin Decl.*, ¶ 23.)[15] Accordingly, the proper construction of "invertible randomized spreading" cannot mean that the spreading operation is performed using a "randomized transform" as suggested by Defendants' proposal.

Defendants' proposal improperly construes "spreading" as "distributing," while Wi-LAN's construction confirms that "spreading" is "modulating." Wi-LAN's construction is consistent with the intrinsic record and supported by the extrinsic evidence. First, the specification explains "spreading" as using a modulator to modulate each data symbol with a code symbol and thereby spread each data symbol over a separate code symbol: "modulator 18 to modulate each with data symbol from each set of N data symbols with the I code symbol from the N code symbol . . . and thereby spread each I data symbol over a separate code symbol." (Ex. M, 4:9-12 (*emphasis added*).) Importantly, the specification does not define "spreading" as "distributing" as the Defendants propose, but makes clear that spreading is "modulating data symbols by codes," consistent with Wi-LAN's construction. Second, the extrinsic evidence is consistent with Wi-LAN's construction and confirms that the codes have a wider or larger bandwidth.

Finally, Defendants' proposal suggests that the randomization is limited to using a "randomized transform" or "randomizer transform" only. Such a limitation is improper and not supported by the specification. Indeed, Defendants' proposal would exclude a preferred

---

[15] *See also*, Ex. O, *Response to Office Action Mailed 3/29/95,* pp. at 15-16 ("It is known in the art to spread symbols and spread spectrum applications, including by using Walsh codes as shown in Albrieux et al. ('952).").

embodiment because FIG. 1 of the patent does not use a "randomized transform" or "randomizer transform" for randomizing. (*Gitlin Decl.*, ¶ 23.) One of ordinary skill in reading the '802 patent would also recognize that a "randomized transform" or "randomizer transform" is merely one available option to apply "complex constants chosen randomly." (*Id.*)

F. Means to Combine

Claim Term	Wi-LAN's Construction	Defendants' Proposal
means to combine the modulated data symbols for transmission	Wi-LAN contends that this claim element should be governed by 35 U.S.C. § 112(6) **Corresponding Structure:** i) element 14 in FIG. 1 including corresponding descriptions in the specification (col. 4:5-7 and 2:36-40); ii) element 14 in FIG. 4 including corresponding descriptions in the specification (col. 4:5-7 and 2:58-62); or iii) element 20 in FIG. 4 including corresponding descriptions in the specification (col. 4:39-44 and 4:66-5:12); and equivalents thereof.	The parties agree that this claim element should be construed in accordance with 35 U.S.C. § 112(6). **Structure:** FIG. 1 (item 14), FIG. 4 (item 14), and col. 4:5-7

The parties agree that this term should be construed under § 112(6). Additionally, the parties agree that the corresponding structure includes element 14 in FIG. 1, element 14 in FIG. 4, and cols. 4:5-7. The parties dispute whether the corresponding structure includes three additional descriptions from the specification: 2:36-40, 2:58-62, and 4:66-5:12. Additionally, the parties dispute whether the corresponding structure includes element 20 in FIG. 4.

The corresponding structure for the "means to combine" includes the descriptions from the specification at 2:36-40 and 2:58-62. Section 2:36-40 mathematically describes element 14 in FIG. 1, which the parties agree is corresponding structure for the "means to combine." (Ex. M, 2:37-38 ("d(k)=[d(1,x) d(2,x) . . . d(N,k)]").) Accordingly, the structure described at 2:36-40 is clearly linked to the "means to combine" and should be included as corresponding structure. Likewise, section 2:58-62 mathematically describes element 14 in FIG. 4, which the parties agree is corresponding structure for the "means to combine." (*Id.,* 2:59 ("d(k)=[d(1,k), d(2,k) . . . d(N,k)]").) Accordingly, the structure described at 2:58-62 is clearly linked to the "means to combine" and should be included as corresponding structure.

Additionally, element 20 in FIG. 4 is corresponding structure for the "means to combine." The '802 patent explains that examples of the N-point transforms illustrated by

elements 20 in FIG. 4 include "a Discrete Fourier Transform (DFT), a Fast Fourier Transform (FFT), a Walsh Transform (WT) . . . ." (*Id.* 4:66-5:12.) Part of the mathematical operation that occurs within each of these three examples of N-point transforms combines the modulated data symbols for transmission in much the same way that combiner 14 in FIG. 1 (which both parties agree is corresponding structure for the "means to combine") performs the same function. (*Gitlin Decl.*, ¶ 24.) Indeed, the element in FIG. 4 that performs the summation function performed by element 14 in FIG. 1 is the mathematical combination that occurs within the N-point transforms. *See id*. Moreover, Claim 4 clarifies that the "first computing means," for which the parties agree element 12 in FIG. 4 is corresponding structure, comprises a "means to combine;" that "means to combine" is element 20. Accordingly, element 20 in FIG. 4 is clearly linked corresponding structure for the "means to combine."

G. Source

Claim Term	Wi-LAN's Construction	Defendants' Proposal
a source of more than one and up to M direct sequence spread spectrum codes, where M is the number of chips per direct sequence spread spectrum code	a device that originates more than one and up to M direct sequence spread spectrum codes, where M is the number of chips per direct sequence spread spectrum code	invalid for failure to meet 35 U.S.C. § 112, if M does not equal N Alternatively, a source of more than one and up to M direct sequence spread spectrum codes, where M is the number of chips per direct sequence spread spectrum code, where M equals N

Wi-LAN's construction is the ordinary meaning in the art as supported by the intrinsic and extrinsic evidence. For example, the specification explains that "[t]he computing means shown in FIG. 1 includes a <u>source</u> 16 of N direct sequence spread spectrum code symbols." (Ex. M, 4:7-9 (*emphasis added*).) Thus, the description in the specification is consistent with Wi-LAN's construction that a source is "a device that originates." Furthermore, the dictionary definitions support Wi-LAN's construction. (*See, e.g.*, Ex. Q, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (10th ed. 1994), pg. 1123 ("source - 1 b (1) a point of origin or procurement"); Ex. C, THE NEW IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONICS TERMS (5th ed. 1993), pg. 1248 ("source/sink device. Source devices originate signals, whereas sink devices terminate signals. Examples of source/sink devices include channel

banks and digital crossconnect systems.").) Finally, Wi-LAN's construction is consistent with the understanding of a person of ordinary skill. (*Gitlin Decl.*, ¶ 28.)

In contrast, Defendants' proposal is entirely unhelpful as it does not even construe the claim term at issue, but, instead, blatantly attempts to read a limitation into the term that is not present in the claim language: "where M equals N." *See Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1370 (Fed. Cir. 2008) ("In examining the specification for proper context, however, this court will not at any time import limitations from the specification into the claims.") (internal quotation marks omitted). There is no disclaimer in the specification or the prosecution history that supports the limitation that "M equals N." *See Seachange International, Inc. v. C-COR Inc.*, 413 F.3d 1361, 1373 (Fed. Cir. 2005) ("A disclaimer must be clear and unambiguous."). Accordingly, Defendants' proposal should be rejected because there is no basis in the claims or the specification to read the limitation "where M equals N" into the construction of this claim term.

H. Transformer

Claim Term	Wi-LAN's Construction	Defendants' Proposal
a transformer for operating on each set of N data symbols to generate modulated data symbols as output, the modulated data symbols corresponding to a spreading of each data symbol over a separate code selected from a set of more than one and up to M codes, where M is the number of chips per code	a device that performs an N-point transform on each set of N data symbols to generate modulated data symbols as output, the modulated data symbols corresponding to a spreading of each data symbol over a separate code selected from a set of more than one and up to M codes, where M is the number of chips per code	invalid for failure to meet 35 U.S.C. § 112, if M does not equal N Alternatively, a transformer for operating on each set of N data symbols to generate modulated data symbols as output, the modulated data symbols corresponding to a spreading of each data symbol over a separate code selected from a set of more than one and up to M codes, where M is the number of chips per code and where M equals N

Wi-LAN's construction is supported by the intrinsic and extrinsic evidence. For example, the specification explains that "[t]he alternative transmitter shown in FIG. 4 includes a <u>transformer</u> 20 for operating on each set of N data symbols to generate N modulated data symbols as output. <u>A series of transforms are shown</u>." (Ex. M, 4:40-43 (*emphasis added*).) The specification also describes "[e]xamples of the N-point transforms." (*Id.*, 4:66.) Thus, the description in the specification is consistent with Wi-LAN's construction that a transformer is "a

device that performs an N-point transform." Additionally, Wi-LAN's construction is consistent with the understanding of a person of ordinary skill. (*Gitlin Decl.*, ¶ 29.)

Like the Defendants' proposal for "source," their proposal for "transformer" is similarly unhelpful as it does not construe the claim term at issue, but, instead, blatantly attempts to read a limitation into the term that is not present in the claim language: "where M equals N." Again, there is no disclaimer in the specification or the prosecution history that supports the limitation that "M equals N." *See Seachange*, 413 F.3d at 1373. Accordingly, Defendants' proposal should be rejected because there is no basis in the claims or the specification to read the limitation "where M equals N" into the construction of this claim term.

I. Correlator

Claim Term	Wi-LAN's Construction	Defendants' Proposal
a correlator for correlating each modulated data symbol from the received sequence of modulated data symbols with a code from a set of more than one and up to M codes, where M is the number of chips per code	a device that measures the degree of similarity between the received signal and each code from a set of more than one and up to M codes, where M is the number of chips per code	invalid for failure to meet 35 U.S.C. § 112, if M does not equal N Alternatively, a correlator for correlating each modulated data symbol from the received sequence of modulated data symbols with a code from a set of more than one and up to M codes, where M is the number of chips per code and where M equals N

Wi-LAN's construction is the ordinary meaning in the art as supported by the intrinsic and extrinsic evidence. For example, the specification explains that "[t]he dot product in FIG. 2 can be implemented as a <u>correlator</u>." (Ex. M, 4:15-16 (*emphasis added*).) The specification further states: "The computing means 24 shown in FIG. 2 includes a <u>correlator</u> 26 for correlating each I modulated data symbol from the received sequence of modulated data symbols with the I code symbol from the set of N code symbols and a detector 28 for detecting an estimate of the data symbols from output of the <u>correlator</u> 26." (*Id.*, 4:22-28 (*emphasis added*).) The correlator described in the above cited sections of the specification correlates for the purpose of "detecting an estimate of the data symbols." (*Id.*) The way that the correlator does this is by measuring how similar the received signals are to the respective codes. (*Gitlin Decl.*, ¶ 30.) Thus, the description in the specification is consistent with Wi-LAN's construction that a correlator is "a

device that measures the degree of similarity between the received signal and each code." Additionally, Wi-LAN's construction is consistent with the understanding of a person of ordinary skill. (*Id.*) Again, Defendants' proposal for "correlator" should be rejected for the same reasons their proposals for "source" and "transformer" are improper.

J. Modulator

Claim Term	Wi-LAN's Construction	Defendants' Proposal
a modulator to modulate each data symbol from each set of data symbols with a code from the up to M direct sequence spread spectrum codes to generate modulated data symbols, and thereby spread each set of data symbols over a separate code	a device that varies one or more of the amplitude, frequency, or phase of each data symbol from each set of data symbols in accordance with a code from the up to M direct sequence spread spectrum codes	invalid for failure to meet 35 U.S.C. § 112

Wi-LAN's construction is the ordinary meaning in the art as supported by the intrinsic and extrinsic evidence. For example, the specification states: "The computing means shown in FIG. 1 includes a source 16 of N direct sequence spread spectrum code symbols and a <u>modulator</u> 18 to modulate each ith data symbol from each set of N data symbols with the I code symbol from the N code symbol to generate N modulated data symbols, and thereby spread each I data symbol over a separate code symbol." (Ex. M, 4:7-12 (*emphasis added*).) Thus, the description in the specification is consistent with Wi-LAN's construction that a modulator is "a device that varies one or more of the amplitude, frequency, or phase of." Furthermore, Wi-LAN's construction is confirmed by the dictionary definitions. (*See, e.g.*, Ex. Q, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (10th ed. 1994), pg. 748 ("modulate - 3 : to vary the amplitude, frequency, or phase of (a carrier wave or a light wave) for the transmission of intelligence (as by radio)").) Additionally, Wi-LAN's construction is consistent with the understanding of a person of ordinary skill. (*Gitlin Decl.*, ¶ 26.) In contrast, Defendants fail to provide any proposed construction for this claim term.

K. Direct Sequence Spread Spectrum Codes

Claim Term	Wi-LAN's Construction	Defendants' Proposal
direct sequence spread spectrum codes	codes over which information bits are spread	pseudo random noise sequences over which information bits are spread

The parties' constructions are in agreement with respect to the phrase "over which information bits are spread." Thus, the dispute turns on whether the term should be construed as "codes" as Wi-LAN proposes, or limited to "pseudo random noise sequences" as the Defendants propose. Wi-LAN's construction is supported by the specification and prosecution history, and there is no disclaimer that would limit the claim term to "pseudo random noise sequences." The specification defines Direct Sequence Spread Spectrum (DSSS) as "a communication scheme in which information bits are spread over code bits (generally called chips)." (Ex. M, 1:25-27 (*emphasis added*).) The specification is clear that DSSS spreads over code bits, as reflected in Wi-LAN's construction, and not "pseudo random noise sequences," as Defendants propose. Furthermore, the prosecution history confirms that direct sequence spread spectrum codes are codes applied to data symbols. (*See* Ex. N, *Combined Declaration and Power of Attorney for Reissue Patent Application*, pg. 2 ("To clarify possible misinterpretations, the term 'code symbol' is replaced by the term 'direct sequence spread spectrum code' or 'code' in the reissue application.").)

Defendants' proposal appears to rely on the statement in the "Background of the Invention" section of the specification which explains that in the prior art it "is customary to use noise-like codes called pseudo random noise (PN) sequences," (Ex. M, 1:27-28); however, the specification goes on to explain that "[i]n this patent, we introduce new codes, which we refer to as 'MC' codes." (*Id.*, 2:15-16 (*emphasis added*).) Moreover, the patent refers to Fourier Transforms and Walsh codes or transforms as direct sequence spread spectrum codes. (Ex. M, claims 26-28; 4:66-5:6; Ex. A, 1:2-5; 2:47-50; *Gitlin Decl.*, ¶ 25.)[16] One of ordinary skill would not understand these codes discussed in the patent to be "pseudo random noise sequences."

[16] *See also* Ex. O, *Response to Office Action Mailed 3/29/95*, pp. 15-16 ("It is known in the art to spread symbols and spread spectrum applications, including by using Walsh codes as shown in *Albrieux et al*. ('952).").

(*Gitlin Decl*., ¶ 25.) Accordingly, it is clear that there is no disclaimer limiting the DSSS codes claimed by the ’802 patent to “pseudo random noise sequences,” and that such a construction would exclude the codes disclosed by the preferred embodiments. *See Seachange*, 413 F.3d at 1373; *MBO Labs.*, 474 F.3d at 1333.

L. Means for Receiving

Claim Term	Wi-LAN’s Construction	Defendants’ Proposal
means for receiving a sequence of modulated data symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols means for receiving a sequence of modulated data symbols, the modulated data symbols having been generated by invertible randomized spreading of a second stream of data symbols over more than one and up to M direct sequence spread spectrum codes	Wi-LAN contends that this claim element should be governed by 35 U.S.C. § 112(6) **Corresponding Structure:** i) element 22 in FIG. 2 including corresponding descriptions in the specification (col. 2:41-43 and 4:18-21); ii) the corresponding element in FIG. 5 to element 22 (which includes the serial-to-parallel converter) including corresponding descriptions in the specification (2:63-64 and 4:18-21); iii) FIG. 20 including corresponding descriptions in the specification (3:58-60 and 6:20-35); and equivalents thereof.	The parties agree that this claim element should be construed in accordance with 35 U.S.C. § 112(6). **Structure:** FIG. 2 (item 22) and col. 4:18-21

The parties agree that the “means for receiving” terms should be construed under § 112(6). Additionally, the parties agree that the corresponding structure includes element 22 in FIG. 2 and cols. 4:18-21. The parties dispute whether the corresponding structure includes the corresponding element in FIG. 5 to element 22 and four additional descriptions from the specification: 2:41-43, 2:63-64, 3:58-60, and 6:20-35. Additionally, the parties dispute whether the corresponding structure includes FIG. 20.

The corresponding structure for the “means for receiving” includes the descriptions from the specification at 2:41-43 and 2:63-64. Section 2:41-43 describes the “means for receiving” in FIG. 2: “FIG. 2 is a schematic showing a Baseband Receiver for the kth received MC-DSSS frame: d′(k)=[d′(1,k) d′(2,k) . . . d′(N,k)].” (Ex. M, 2:41-43.) Additionally, section 2:63-64 describes the “means for receiving” in FIG. 5: “FIG. 5 is the alternate receiver for the kth received MC-DSSS frame d′(k)=[d′(1k)d′(2,K) . . .d′(N,k)].” (*Id.*, 2:63-64.) Accordingly, the structure described at 2:41-43 and 2:63-64 is clearly linked to the “means for receiving” and should be included as corresponding structure.

The corresponding structure for the "means for receiving" includes the corresponding element in FIG. 5 to element 22 in FIG. 2. Element 22 in FIG. 2, which the parties agree is corresponding structure, is labeled d'(k). FIG. 5 includes an unnumbered element that corresponds to element 22—the unnumbered d'(k) and the serial-to-parallel converter at the far left of the figure. Although there are no numerical labels in FIG. 5, it is clear that d'(k) in FIG. 2 corresponds to d'(k) in FIG. 5. (*Id.*, 2:41-43; 2:63-64 (*quoted above*).) Additionally, FIG. 5 is described as the "alternative receiver to the one in FIG. 2." (*Id.*, 4:44-45.)

The corresponding structure for the "means for receiving" also includes FIG. 20 and the corresponding descriptions at 3:58-60 and 6:20-35. The specification explains that FIG. 20 discloses an embodiment of the "receiver": "FIG. 20 is a schematic showing the passband receiver for a packet where fo is the IF frequency and fo+fc is the RF frequency." (*Id.*, 3:58-60 (*emphasis added*).) Accordingly, FIG. 20 is clearly linked structure for the "means for receiving," and 3:58-60 is corresponding description. Additionally, the specification further explains the "receiver" embodiment disclosed in FIG. 20 at 6:20-35: "FIGS. 19 and 20 which illustrate the transmitter and the receiver respectively." (*Id.*, 6:27-28 (*emphasis added*).) Accordingly, the structure described at 6:20-35 is clearly linked to the "means for receiving" in FIG. 20 and should be included as corresponding structure.

M. Second Computing Means

Claim Terms	Wi-LAN's Construction	Defendants' Proposal
second computing means for operating on the sequence of modulated data symbols to produce an estimate of the second stream of data symbols	Wi-LAN contends that this claim element should be governed by 35 U.S.C. § 112(6). **Corresponding Structure:** i) element 24 in FIG. 2 including corresponding descriptions in the specification (2:41-54 and 4:13-28); ii) the elements of FIG. 5 between the serial-to-parallel and parallel-to-serial converters including corresponding descriptions in the specification (2:63-67 and 4:44-46); or iii) a computing device programmed to perform the algorithms disclosed in the foregoing; and equivalents thereof.	The parties agree that this claim element should be construed in accordance with 35 U.S.C. § 112(6). **Structure:** FIG. 2 (item 24) and cols. 2:41-54, 4:21-28

The parties agree that this term should be construed under § 112(6). Additionally, the parties agree that the corresponding structure includes element 24 in FIG. 2 and cols. 2:41-54

and 4:21-28. The parties dispute whether the corresponding structure includes the elements of FIG. 5 between the serial-to-parallel and parallel-to-serial converters and the additional description from the specification at 4:13-28, 2:63-67, and 4:44-46. The parties also dispute whether the corresponding structure includes and "a computing device programmed to perform the algorithms disclosed by the foregoing."

The corresponding structure for the "second computing means" includes the entire description at 4:13-28. This section of the specification begins: "FIG. 2 illustrates the receiver of the MC-DSSS modulation techniques accepting the kth MC-DSSS frame and generating estimates for the corresponding N symbols of information." (Ex. M, 4:13-16.) This description of FIG. 2 describes the "second computing means" that the parties agree is illustrated by element 24 in FIG. 2. Accordingly, the structure described at 4:13-28 is clearly linked to the "second computing means" and should be included as corresponding structure.

The corresponding structure for the "second computing means" includes the elements of FIG. 5 between the serial-to-parallel and parallel-to-serial converters. FIG. 5 is described as the "alternative receiver to the one in FIG. 2." (*Id*., 4:44-45.) The parties agree that element 24 in FIG. 2 is corresponding structure, and the unnumbered portion of FIG. 5 that corresponds to element 24 are the elements between the serial-to-parallel and parallel-to-serial converters. Element 24 in FIG. 2 includes the structure in between the "d'(k)" at the input and the "parallel-to-serial" converter at the output. Accordingly, the corresponding structure in the "alternative receiver" of FIG. 5 is the elements between the serial-to-parallel and parallel-to-serial converters.[17]

Additionally, the corresponding structure includes "a computing device programmed to perform the algorithms disclosed by the foregoing." As described above with respect to the "first computing means," the transceiver claimed by the '802 patent can be implemented by or on a general or special purpose computer, and the corresponding structure for a § 112(6) claim for a computer-implemented function is the algorithm disclosed in the specification. In addition to

17 The corresponding structure also includes the description of the "second computing means" illustrated in Fig. 5. (*See id.*, 2:63-67 ("FIG. 5 is the alternate receiver…."); 4:44-46 ("An alternative receiver to the one in FIG. 2 using the MC codes in FIG. 3 is shown in FIG. 5….").)

providing corresponding structure in and of themselves, element 24 in FIG. 2, the elements of FIG. 5 between the serial-to-parallel and parallel-to-serial converters, and the corresponding descriptions in the specification disclose an algorithm that can be implemented by a computing device to implement the transceiver claimed by the ’802 patent. (*Gitlin Decl.*, ¶ 19.) Accordingly, the corresponding structure for the “second computing means” includes “a computing device programmed to perform the algorithms disclosed by the foregoing.”

N. Means to Combine Output from the Second Computing Means

Claim Terms	Wi-LAN’s Construction	Defendants’ Proposal
means to combine output from the second computing means	Wi-LAN contends that this claim element should be governed by 35 U.S.C. § 112(6). **Corresponding Structure:** parallel to serial converters in FIGS. 2 and 5 including corresponding descriptions in the specification (2:41-54 and 2:63-67); and equivalents thereof.	The parties agree that this claim element should be construed in accordance with 35 U.S.C. § 112(6). **Structure:** FIG. 2 (parallel-to-serial converter)

The parties agree that this term should be construed under § 112(6). Additionally, the parties agree that the corresponding structure includes the parallel-to-serial converter in FIG. 2. The parties dispute whether the corresponding structure includes the parallel-to-serial converter in FIG. 5 and the description from the specification at 2:41-54 and 2:63-67. FIG. 5 is described as the “alternative receiver to the one in FIG. 2.” (Ex. M, 4:44-45.) Accordingly, the parallel-to-serial converter in FIG. 5 is also corresponding structure.

In reference to FIG. 2, the specification mathematically describes the “means to combine output from the second computing means:” “Sym(k)=[sym(1,k) sym(2,k)…sym(N,k)] is the estimate of the Kth information-bearing vector Sym(k) . . . .” (*Id.*, 2:44-45.) Likewise, in reference to FIG. 5, the specification mathematically describes the “means to combine output from the second computing means:” “Sym(k)=[sym(1,k) sym(2k)…sym(N,k)] is the estimate of the information-bearing vector Sym(k).” (*Id.*, 2:65-67.) Accordingly, the structure described at 2:41-54 and 2:63-67 is clearly linked to the “means to combine output from the second computing means” and should be included as corresponding structure.

O. Combining the Modulated Data Symbols for Transmission

Claim Term	Wi-LAN's Construction	Defendants' Proposal
combining the modulated data symbols for transmission	no construction necessary (*i.e.* to combine the modulated data symbols for transmission)	using a parallel-to-serial converter to combine the modulated data symbols for transmission

Defendants' proposal does not attempt to construe the claim language at issue, and the Defendants agree that the term should be construed as "to combine the modulated data symbols for transmission." Rather, Defendants' proposal attempts to read a limitation into the claim that it must be performed "using a parallel-to-serial converter." Accordingly, the issue for the Court to decide is whether the claim term must be performed "using a parallel-to-serial converter."[18] Importantly, there is no disclaimer in the specification or the prosecution history that would support such a limitation. Moreover, Defendants' construction improperly attempts to read a structural limitation into a functional element of a method claim.

Defendants' proposal also improperly excludes a preferred embodiment. *See MBO Labs.*, 474 F.3d at 1333. The '802 patent specification explains that a "combiner 14 combines the modulated data symbols for transmission." (Ex. M, 4:6-7.) Combiner 14 is illustrated in FIG. 1 as an adder or a summer. (*Gitlin Decl.*, ¶ 24.) Notably, Defendants' identify combiner 14 in FIG. 1 as corresponding structure for the means-plus-function term "means to combine the modulated data symbols for transmission." Thus, Combiner 14 in FIG. 1 (an adder or a summer) can be used to perform the claimed "combining" function, and there can be no dispute that combiner 14 in FIG. 1 is not "a parallel-to-serial converter." (*Id.*) Accordingly, Defendants' proposal should be rejected because it improperly excludes a preferred embodiment and reads a limitation into the claim term without any justification.

18 Because this claim term can be easily understood by a jury, no construction is necessary. *See Saxon Innovations v. Nokia Corp.*, No. 6:07-CV-490, 2009 U.S. Dist. LEXIS 67019, at *47 (E.D. Tex. July 30, 2009) ("The Court finds that these terms will be easily understood by a jury, and that no construction is necessary for either of these terms."); *Peer Commc'ns Corp. v. Skype Techs. SA*, No. 6:06CV370, 2008 U.S. Dist. LEXIS 92683, at **9–10 (E.D. Tex. May 29, 2008) (declining to construe term that the jury can understand) (internal citation omitted)).

DATED: January 20, 2010

/s/ Sam Baxter
Sam Baxter, Lead Attorney
Texas State Bar No. 01938000
sbaxter@mckoolsmith.com
104 E. Houston Street, Suite 300
P.O. Box 0
Marshall, Texas 75670
Telephone: (903) 923-9000
Telecopier:(903)923-9099

Robert A. Cote
NY State Bar No. 2331957
rcote@mckoolsmith.com
John F. Petrsoric
NY State Bar No. 3995313
jpetrsoric@mckoolsmith.com
McKool Smith, P.C.
One Bryant Park, 47th Floor
New York, NY 10036
Telephone: (212) 402-9400
Facsimile: (212) 402-9444

Kevin Burgess
Texas State Bar No. 24006927
kburgess@mckoolsmith.com
Seth Hasenour
Texas State Bar No. 24059910
shasenour@mckoolsmith.com
300 W. 6th Street, Suite 1700
Austin, Texas 78701
Telephone: (512) 692-8700
Facsimile: (512) 692-8744

ATTORNEYS FOR PLAINTIFF WI-LAN INC

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing pleading was electronically filed in compliance with Local Rule 5.1. As such, this notice was served on all counsel who are deemed to have consented to electronic service on January 20, 2010.

/s/ Sam Baxter